# THE BUILDER

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## EFFICIENCY, CONCENTRATION, AND WASTE.

IT is perfectly natural for the great majority of men to dislike and fear Socialism, which, as it is usually represented, has few attractions except for the "have-nots," and is at first sight alien to the instincts of the race which believes almost blindly in its ability to "manage its own business." We take up a socialistic treatise with a feeling of instinctive distrust, as if we were handling poison, yet it is easy to believe that the world might be made a much more pleasant one by the sympathetic consideration of processes by which much of the waste necessitated by unchecked individualism could be prevented.

Few writers have drawn more telling pictures than Mr. H. G. Wells of the hideous inhumanity of our industrial towns; no educationist has shown more clearly the waste and inefficiency of our educational machinery, and has exposed more clearly the sordid gaps which separate class from class and the narrow interests which dominate the lives of many; and yet all would admit that his teaching is broadly socialistic in its direction. The fact remains that we have left behind us for ever the ideal of unfettered individualistic competition and are slowly groping our way towards a *via media* which will leave to the individual rewards for his personal exertions, but will secure to the State many of the advantages which can only be gained by wisely-directed collective action. Every civilised nation has recognised that it cannot allow its people to starve, and it is now learning that it cannot allow them in the interests of the community to be underfed or uneducated.

Our educational systems are, as we are constantly told, inefficient and wasteful, and we suffer to a great extent from the overlapping of different authorities whose work covers much the same field; and possibly in dealing with architectural education we are in danger of falling into similar errors. We have in London many architectural schools, among which may be mentioned the Royal Academy, the Architectural Association School, the Royal College of Art, South Kensington, University College, the Atelier, and the schools connected with the County Council and other educational bodies. All of these, excepting perhaps the Atelier, provide substantially the same curriculum and attract a similar class of students, and it seems that in some of them the course of study might with advantage be arranged in such a manner as to break new ground and fill wants which are at present untouched.

We consider specialisation, if undertaken at too early an age, is the greatest of all mistakes. The boy of sixteen or seventeen is able to obtain the full benefit from a general education, but is in most cases too young to specialise with advantage to himself; and the same reasoning applies with equal force to architectural education, in which time will be ultimately lost if the foundations of general architectural knowledge have not been thoroughly laid.

But a time arrives when it is possible to sum up the inclination possessed by a student and to direct it into the best channel, which is the object of wisely-directed technical education. Now, what are the architectural student's objects, and how can they be best achieved? To begin with, we have the student with a strong bent for domestic work and perhaps the connections and friends with whose aid he may in time be fairly certain of securing a satisfactory practice. Obviously in such a case a careful and exhaustive study of old and modern domestic design, its construction and detail, and the parts and uses of all appliances which are required in house-building are what is most essential.

For the architectural student who has ambitions to design in the "Grand Manner" and has his way to make, the best course of study will be that which will teach him to deal with masses in a broader manner, and he must study the more monumental side of architecture and determine, as far as possible, in what direction he is likely to obtain an opening. Perhaps he will elect to make his way by means of public competition, and, if so, we believe that much may be done to save some of the initial failure and toil which many undergo. We assume that he has learnt to draw correctly and has a good grounding in architectural style; but, having that, there is one thing more which perhaps might with method be taught up to a certain point. By this we mean the faculty of electing between alternative plans and doing so wisely, and it seems that lectures on the requirements of types of public buildings and the broad principles of planning them would help him to acquire in part the mental attitude which we are sure the experienced winner of competitions has by instinct. The successful competitive architect marshals the various distributions of space and mass before him, and rejects them in turn till he finds a likely solution, and only then begins to think out the details of arrangement. Without this faculty competitive designing is the most wasteful of occupations, and the occasional winning of a competition by a species of luck does not detract from the fact. The really efficient man has mastered a science which is outside of and beyond architecture considered as an art, rather resembling a mathematical process which demands analytical powers of a high order. Our student may have made up his mind to try his fortunes in a newer and a younger country, in which buildings have for the most part not attained to the permanence and cost of those we have with us here. The average buildings in our Colonies and tropical possessions, if considered critically, in many cases show the application of architectural types which are not adapted for the materials or conditions they have to meet. We see travesties of an English house carried out in New Zealand or Australia, or it may be Western Canada, when another treatment suitable for the slighter or cheaper materials they are built with would be preferable. In India, China, Borneo, and many of our Colonies the architect unfortunately seldom gets a chance of building for futurity; but this is not frankly recognised by him because he has had no specialised education, and seldom thinks out problems for himself. We have our schools for the study of tropical disease here; is it absurd to think we might, in connection with some educational foundation, have classes for the study of special types of design and construction suitable for colonial and tropical conditions? The best way in which different kinds of covering materials which alone are available in many of our Colonies can be used and the science of timber-framing are among the subjects to be considered in order that the architect may be equipped for his work. The low standard of design in many outlying parts of the Empire is largely no doubt attributable to the carpenter or self-styled "architect"; but it is at least in part caused by the fact that the young architect goes abroad with no preliminary training such as might well be acquired here.

Our cousins in America have made their way from the beginning and developed a style in dealing with the slighter wooden buildings once almost universal in the West, and it would seem that we, too, might develop distinctive architectural types in Australia and the East. At present the greater number of our colonial towns are crude and soulless renderings of modern provincial architecture, which suggest want of thought, ability, and education.

Concentration of purpose in life will save much time, and those who possess it will not find so much reason to blame fate that others do who "muddle through," for most of us are fit to fill some position or other well, but comparatively few know exactly what their *métier* is. It could probably be clearly demonstrated that the greatest sum of human activity is expended with little or no result, and what is effected is the result of a mere fraction of the total amount of labour expended

# STUDENTS' WORK AT THE ROYAL ACADEMY.

ARCHITECTURAL schools have, like all other institutions, their periods of excellence and their periods of mediocrity, and it is often hard to give reasons for their variation of merit from year to year. Sometimes the result is produced by a few unusually gifted students, and at others by the greater excellence of the teaching and the quality of personal magnetism that some teachers possess, which enables them to hand on the torch of enthusiasm to those with whom they are brought in contact. The high position now held by the Architectural Association School is closely connected with the personality of its new head, and we cannot help envying the students who have the opportunity of coming in contact with one whose influence is made apparent by the extremely high standard which has been attained, and a very similar criticism may be applied to the Architectural School at the Royal College of Art. The Atelier is fortunate in having found much of the same kind of impetus from its peculiar constitution, which, in comparison with other teaching institutions, is like a free republic as compared to an autocracy. But, in common with the Royal College of Art and the Architectural Association, it is doing the greatest service to the cause of architectural education, while we feel that some of our other schools are for the time being lagging behind. Enthusiasm and energy are shown in the work of the Liverpool School, but we have felt it is enthusiasm tending a little too much in one direction—that of a study of architectural design when it was slowly crystallising under the influence of pedantry; but this is only opinion, and we have no doubt the contrary view will find many supporters.

The Architectural School at the Royal Academy has great traditions behind it, and in expressing our opinion that its present phase is not one marked by high distinction we are bearing testimony to the brilliant achievements of past years in its history rather than condemning with faint praise much that is really meritorious. The man who does able work creates a standard with which his future efforts are remorselessly compared, and the School with the greatest past is the one which must fight hardest to retain its laurels.

One criticism that occurs to us after a study of the students' designs at the Royal Academy has frequently been raised by us before, and is that few students and architects recognise the full importance of architectural planning. There is abundant evidence that our students and architects alike look on a plan as a thing which has to be made as a prelude to what they really enjoy—the consideration of design in elevation and section. We believe this to be entirely wrong, and think that plan should be the main preoccupation of the designer. The essence of great design lies in masterly planning, and artistic skill can be made as evident in plan as in elevation. Originality and thought can be always shown in planning, while circumstances may leave us no better solution of an elevational problem than that of reproducing some well-known *motif* almost in the form that it has been rendered before.

The Travelling Studentship and £60 go to Mr. William Henry Hamlyn for his design for "A Picture Gallery in a Park," shown by a very careful and good set of drawings. The large sculpture hall, which forms the centre feature of the design, is surrounded by a range of smaller galleries, the main staircase being reached by crossing the sculpture gallery instead of rising out of it—a fault committed by the author of No. 192. The elevations are quiet and dignified, but we regret that the Order which marks the main entrance should be of a larger scale than the Order with which the flanks are treated, which gives a somewhat disjointed and "stuck on" appearance to the portico. The garden courts at either end, terminating in hemicycles and carried out with a colonnade, are pleasantly and appropriately treated.

In No. 192 the centre flight of the main staircase breaks into the sculpture gallery, which is further cut up by screens of columns; altogether it lacks the unity and breadth of the winning design, and the treatment of the entrance shows a want of scale and proportion.

No. 193 is quiet and dignified, but is somewhat funereal in character. The central gallery has not sufficient prominence to ensure satisfactory grouping. The spacing of the columns in this and many other designs of the year is unpleasing, the intercolumniation being much too wide and the columns too attenuated.

The most pleasing essay in design of the year is that of Mr. Harold Clayforth Mason, who wins a silver medal and £15 for his design for a Public Library. The planning of this and several other of the library designs is not perfect from the practical standpoint of supervision, neither does it suggest the designer's delight in planning as an art, but, as we have not the conditions which were set, we do not know whether this indicates weakness in design. But the elevations and sections are almost perfect in their character, simplicity, and proportion, and far surpass any other work of the year.

Mr. James Mollison Wilson wins a silver medal and £20, awarded to first-term students, for his design for the same subject (No. 213). The scheme is a good one, shown by a clear and good set of drawings. The centre hall forms a print-room, the lending library being in rear opposite the entrance, but the height of the hall is somewhat excessive.

No. 235 sends a quiet and meritorious design, but from a librarian's standpoint the supervision of the various rooms would be held to be defective.

No. 234 shows knowledge of design and sense of proportion; the planning again is defective; the two fountain courts on either side of the lending library strike us as being useless in the positions in which they are placed. "A Tea House in a Public Garden" has proved a popular subject, and a second prize of £10 and a bronze medal is awarded to Mr. James Gibson Swinton for a carefully-considered and well-proportioned design in which the large tea-room forms a hall dominating the group and surrounded by smaller rooms. We do not quite like the high-pitched roof, but throughout the students' drawings of the year a disposition is shown to avoid low-pitched roofs. No. 220 is one of the best designs for a tea house; the author has evidently studied Chambers' work, and his elevations are very well proportioned and detailed; we may add that, in our opinion, the thorough study of one of the Renaissance masters will always repay a student. No. 218 sends a design which may be described as Neo-Grec in type, and which is clever, but not quite satisfactory in conception.

Nos. 230 and 231 are designs for Entrance Lodges and Gates; the former is excellent both in the detail of the ironwork and that of the square Georgian lodges; the latter is well thought out, but a little marred by the unpleasing proportion of the gabled ends of the lodges, which are hardly in keeping with the severer detail below.

Some good designs have been submitted for a Village Hall. The author of No. 222 has based his on Mr. Lutyens' work, which he has evidently closely studied; his drawings are excellent, and the design is thoroughly sound. No. 216, on the other hand, is ponderous and heavy for this type of building. A Kursaal is an exceptionally difficult subject, and we are not surprised that no competitor should have produced a perfect solution of the problem. The author of No. 232 sends a clever but somewhat intricate plan, the dominating feature of which is a circular restaurant surrounded by a corridor, off which are placed billiard and other rooms, while a concert hall balances a theatre at either end of the long front; the elevations are wanting in purpose and simplicity. No. 205 is a lakeside kursaal, shown by a good set of drawings. No. 203 is also a good scheme laid out on simple rectangular lines, with loggias in front of restaurants, a concert hall at one end balanced by reading and writing rooms at the other, the theatre being placed in the rear of the group. We do not like the break in the centre of the front, and the monumental column appears to us superfluous. No. 217 is a simple cross-shaped plan, a type which looks better in plan than in execution, as the projection of the centre wing is destructive of breadth of effect. A kursaal appears to us to be a type of building in which a Baroque treatment is singularly appropriate, but this point of view has not been taken by any competitor.

No good designs have been submitted for a large Town House, which is surprising, and an Insurance Office has not been treated with success by most of the students. No. 208 is in a Greek manner and shown by good drawings; No. 212 is well detailed; No. 201 dignified and well grouped; No. 200 has made a praiseworthy attempt to deal with the subject on very simple lines, giving abundant window openings; colour decoration is suggested in the frieze. No. 197 is distinguished again by its good proportion and extreme simplicity, but the best of all is that sent in by the author of No. 221 and entitled "An Insurance Office in a Country Town." It is shown by one of the ablest sets of drawings in the galleries, and is admirably and cleverly treated in elevation, in which both brick and stonework are employed. The treatment of the arched ground-floor story is very happy.

We must not forget to draw attention to Mr. James Mollison Wilson's model for a caryatid for a chimney-piece. While not a solution of the problem set, it is a well-considered piece of design, and we congratulate him on winning the silver medal and £5 offered for original composition for architects.

Generally our criticism is that there is little evidence of the pleasure which should accompany creative effort in most of the work submitted, a fact which may be largely due to the preoccupation of many of the students with other thoughts at a crucial period in the world's history; but the absence of the delight of working at an all-engrossing subject is, we are afraid, painfully evident in much of the work shown. Without it no great architecture has or ever will be created, and with it all things are possible.

We believe that students would often find it easier to design if they had problems set them which more nearly resembled the subjects usually set to architects in practice, and we think a departure might occasionally be made with advantage by giving a replica of conditions on which some competition had been decided. The absence of any limitations in size, cost, or space occupied, which are frequent in students' competition conditions, has a somewhat bewildering effect. We remember Sir Ernest George saying that, although the wishes and requirements of clients were often difficult to meet, the necessity of meeting them were, he thought, often productive of the best results from a point of design; and in much the same way the schedule of dimensions and other particulars which are given in the professional competitions are a great assistance both in testing the ingenuity of a planner and because they do away with doubt as to the exact requirements of a type of building. In both the competitions for a tea house and a kursaal it is clearly shown by the designs submitted that each student had in a great measure to set his own conditions as to accommodation, which is, in reality, a handicap, while it militates against a close comparison of the designs submitted.

Space will not admit of our dealing with the sculpture and painting sections; much of the latter appeared to be excellent, and Mr. Edgar Annan Howes well deserves the silver medal and £30 for the spirited figure group which he has submitted.

## NOTES.

**The Professional Classes War Relief Council.**

THE Professional Classes War Relief Council has started its work under good auspices. Its President is the Lord Mayor of London, supported by the Archbishop of Canterbury and Cardinal Bourne as Vice-Presidents, and assisted by a Council whose members include the Presidents of the Royal College of Surgeons, Surveyors' Institution, the Royal Institute of British Architects, the Society of Architects, the Institution of Mining and Metallurgy, the Royal Society of Medicine, the Royal Medical Benevolent Fund, the Auctioneers' and Estate Institute, the Incorporated Society of Headmasters, the Eugenics Education Society, the National Union of Women's Suffrage Societies, and many other prominent men and women representing important societies. Mr. Pierpont Morgan has placed Nos. 13 and 14, Princes-gate at the disposal of the Society for the period of the war, and at an "At Home" last Saturday a good exhibition devoted to art, crafts, and needlework, statuary and silver, leather-work and jewellery, pictures and toys, was thrown open to numerous visitors. The work was contributed by artists and craftsmen and others affected by the war, and public interest in the movement was clearly manifested. The second and third floors at Princes-gate have been fitted out and furnished as a nursing home by voluntary contributions, and are now open for patients. The movement seeks to relieve distress among the professional classes arising from the war, to find employment for them, and for those connected with them in any capacity. The various professional societies, the Architects' War Committee, the Architects' Benevolent Society, and many other bodies of like nature are all working together for the same end, and we propose in a subsequent issue to give a diagram showing the various fields covered by them and the sphere of activity of each, and architects and others who are in a position to give may be assured that any assistance will be well bestowed and expended with good effect. If the war has shown nothing else, it has demonstrated the absolute union of all classes in the country and their desire to do all that is possible for the mitigation of the hardships arising from it, and so out of evil has arisen good.

**Royal Academy Students' Designs.**

THE usual public exhibition of work done in competition for prizes in the Royal Academy Schools took place on Friday and Saturday last week. We naturally take architectural designs first, though as usual they do not represent the best or most important work of the year. The subject for the Travelling Studentship in Architecture, gained by Mr. W. H. Hamlyn, was "A Picture Gallery in a Public Park." The lower portion of the building shown, treated with a columnar Order, and extended at each end into an open-air terrace terminating in a semicircular colonnade, would be a pleasing piece of park architecture, were it not crushed and overweighted by the mass of the upper story with its ungraceful glass roof—all the result of a wrong system of lighting. When the latest new rooms at the National Gallery were opened, the mistake of throwing a direct light down upon the spectators in the middle of the room and only an indirect one on the pictures was practically demonstrated, and was the subject of much public comment, but all this seems to be thrown away upon the Royal Academy and its students, and the prize is given to a top-lighted picture gallery, with the light for the most part passing through two strata of glazing—another obstacle to effective lighting. The design No. 193 could hardly perhaps claim the prize owing to its simple and rather naive architectural treatment, but it shows that the author knows how a picture gallery ought to be lighted. The one example submitted for "an original model of architectural ornament" is a good piece of modelling, but "original" is almost absurd; it is merely the putting together of some commonplaces of *rococo* detail. As usual, the sculpture designs—"Truth Overcoming Falsehood"—are the best work of the year; the prize group, by Mr. Edgar Howes, is admirable, and would be well worth working out life-size; and several of the others have much merit. The subject for a decorative painting was "Return from Harvest"; Mr. G. V. Frampton, who takes the prize, has treated it as a classic subject in a composition of graceful figures a little too scattered and broken up in grouping for the best decorative effect; his life-size cartoon of two of the figures is much the best in the competition. Nos. 18 and 25 are well-composed decorative pictures. The prize drawing for "A Cartoon of a Draped Figure" (subject, "Urania"), by Mr. James Williams, is really fine both in conception and execution, and quite distances the other competitors. The Creswick Prize for landscape is not awarded, and hardly could have been. The annual exhibition of the students' work of this class has always impressed us with the conviction that landscape-painting in oil is one of the most difficult of all the arts, for it is here that failure is most apparent; the student painter's temptation seems always to be to over-accentuate the contrasts of light and shadow and colour, in a manner more suited to scene-painting than to landscape art in the true sense. No. 9 had avoided this, and produced something more like a picture than the rest. A detailed review of some of the designs submitted for the prizes is given on page 570. The exhibitions of work by the present travelling students in architecture, painting, and sculpture showed that all three were making good use of their opportunities.

**British School at Rome.**

THE annual meeting of subscribers to the British School at Rome, held at the rooms of the Society of Antiquaries on Tuesday, the 8th inst., had a crowded attendance. Professor Reid, who took the chair, adverted to the peculiar circumstances under which this year's meeting was held, circumstances visibly illustrated by the attendance of the Secretary in military uniform, but urged that they were justified in keeping up archæological studies, the value of which would remain after the war was over; and Sir F. Pollock, in moving one of the formal resolutions, hoped that next year one ancient superstition would be found to have vanished, the superstition that any paradox in archæological theory merited serious consideration provided that it was expressed in sufficiently bad German and with sufficient insolence of manner. The meeting really (though not formally so announced) represented only the "Faculty of Archæology, History, and Letters" of the British School at Rome, which is now fortunately established on a wider basis, and has become also a School of Architecture, Sculpture, and Painting, based on Roman study. But the Report showed that a great deal of valuable archæological work has been carried on during the past year, and especially that Dr. Ashby, the Director, hopes to be able to bring to a conclusion, during the present winter, his work on the fascinating subject of the ancient Roman aqueducts, which he has been prosecuting in so thorough a manner, and some of his researches in which were published at length in the *Builder* some years ago, accompanied by plans, sketches, and photographs. Mrs. Strong, the Assistant Director, has been giving special attention to the remains of painted decorations in the still existing lower stories and vaults of the mass of important dwelling-houses which once crowded the Palatine. In some cases vaults, difficult of access and long ignored, have been found to have walls or ceilings covered with elaborate painted decorations, sufficiently preserved to give the general design and much of the detail. A lecture on this subject by Mrs. Strong, with lantern illustrations, formed the main attraction of the meeting. To hear Mrs. Strong lecture is always an intellectual treat; to an accurate knowledge of her subject she adds an unusual capacity for clear and lucid verbal exposition; and of the archæological interest of her illustrations there could be no question. But archæology is one thing, art is another. It is interesting to find that a palatial Roman dining-room was decorated with wall-paintings of slaves waiting at table or bringing in the dinner, but what would be thought of a modern dining-room decorated with wall-paintings of the waiters? When Mrs. Strong asks us (as she did) to regard some of these decorations as suggestive for modern design, we can only reply that they show that interiors of the early Empire were covered with a style of decoration that can only be described as crude, vulgar, and commonplace; interesting as records, but the last kind of thing to imitate.

**Reprisals in Kind.**

REFERRING to the report that the public buildings of Brussels have been undermined for destruction, Mr. Maurice Maeterlinck writes to the *Figaro* to make a suggestion for their preservation. Why, he asks, should not the Allies decide upon hostage German towns which would answer stone for stone for the cities of the Allies? If Brussels was destroyed Berlin would be razed to the ground, Hamburg would answer for Antwerp, Munich for Ghent, and Nuremberg for Bruges. Any proposal likely to arrest further wanton destruction is to be welcomed, and, though as a general rule threats might be left to the Germans, yet if there is the least chance of this one obtaining its object perhaps an exception might be made for once. The difficulty is, however, that the threat may not succeed, and Brussels, Antwerp, Bruges, and Ghent may yet be laid in ruins. In this case the threat would lead to still more wanton destruction and only aggravate the evil that, presumably, it was intended to prevent, and, unless it is to be acknowledged as a "bluff" that failed, Berlin, Hamburg, Munich, and Nuremberg must also share the same fate. Why should they not? Mr. Maeterlinck seems to ask. The answer is obvious. Because this suggestion appears to ignore the artistic value of such towns and to regard them and any masterpieces of architecture they may contain simply as so much material property procurable and renewable by money and hard work, and to take it for granted that they have no value for anyone outside the artificial, and perhaps temporary political boundary line within which they happen to be situated. It is impossible to accept this point of view. Are not all fine old buildings, wherever situated, the heritage of all mankind, and perhaps the most cherished of the possessions of our common civilisation? Would civilisation be the richer by the destruction of Munich? Would humanity be consoled for the loss of Bruges by the additional and equally grievous loss of Nuremberg? Is Nuremberg the less precious because it happens to be in Germany, and has not architecture suffered enough already? Is there any reason for demanding such satisfaction for injuries already sustained as will inflict still further injury not only on ourselves, but on every civilised nation in the whole world, whether combatant or neutral? The proposal has already been made that the leaders of the German nation should be held personally responsible in life and fortune as security for further destruction. The forfeiture of such security would entail no loss to civilisation, but, being heavily mortgaged, already can be of but little value. We suppose the Germans now take it for granted that no damage they can do can possibly affect themselves, for "Greater Germany" must even in the Fatherland be a vanished dream.

A GENERAL meeting (ordinary) of the Royal Institute of British Architects was held at No. 9, Conduit-street, Regent-street, W., on Monday, Mr. Ernest Newton, A.R.A., President, in the chair, when Mr. J. J. Joass read a paper on "The Work of the Late John Belcher, R.A."

Mr. Belcher, he said, was born in 1841 at Trinity-sq., Southwark. He spent his life in London, and died last year at no great distance from the place of his birth. He was, therefore, a true Londoner, and his interests and sympathies were bound up in the city which he loved so well. His father, Mr John Belcher, was also an architect and surveyor, who practised at No. 5, Adelaide-place, London Bridge. He was an able man of business, with considerable artistic and musical ability. His mother was a direct descendant of William Woollet, the eminent engraver. The Woollets were originally of Dutch origin, and as many of the members of the family had artistic gifts Mr. Belcher's artistic character may have been derived from them. Mr. Belcher spent a year or two at school at Luxembourg, and even at that time gave evidence of a decided bent for sketching and drawing, some of his sketches of the Luxembourg fortifications being engraved in the *Illustrated London News* of 1867.

About the age of twenty-one he spent some time in Paris studying especially modern French architecture, and some of the work done in his father's office soon afterwards bore distinct evidence of this influence. About the year 1865 he was taken into partnership by his father, and commenced an active career as an architect, which only terminated with his death.

In forming an estimate of Mr. Belcher's work and of the very considerable influence which he has had on contemporary architecture there is one aspect which should not be lost sight of. His father practised in the City of London at a period when the traditions of Soane, Donaldson, and their school had by no means died out. He was almost entirely unaffected by the Gothic revival and the teachings of its prophets, not from any inability to appreciate and understand the beauty of Gothic, but from a logical conviction that such work was unsuitable to the requirements of his time, particularly in the class of work he was likely to be engaged upon in London City. He sent his son to Paris to study especially the Renaissance work, and no doubt what he learned at that time affected in a very marked manner the work of his later years. A continuity of thought and tradition was thus preserved from father to son which connected him to an unusual extent with the traditions of the later phases of English Renaissance architecture and specially qualified him to take part in the early manifestations of its revival.

On his return to his father's office the first buildings which bore the mark of the influence of John Belcher, jun., were the Royal Insurance Company's building in Lombard-street and the Commercial Union Assurance Company in Cornhill. Some of the sculpture of the former building was executed by Thomas Thorneycroft, the father of the present Royal Academician, and illustrates at that early period the importance which Mr. Belcher attached to the allied arts in connection with architecture—a principle to which he was faithful to the last and which was to have a great effect on his future work.

Notwithstanding the paternal warnings and instruction, he soon came under the influence of the Gothic movement; and, in fact, became one of its most enthusiastic devotees. He was a contemporary of Sedding, and the work of Godwin, Burges, and Street affected him powerfully. The effects of this change are first noticeable in his work at Mansion House Buildings at the corner of Queen Victoria-street and Poultry, now occupied by Messrs. Mappin & Webb, and a small hall for the Curriers' Company, afterwards pulled down and rebuilt by Messrs. Rylands to allow of the extension of their premises.

During Mr. Belcher's Gothic period such men as Mr. Harry Wilson, Mr. Needham Wilson, and Professor Beresford Pite were at work in his office, and had he been successful in obtaining a commission for a great public building at this time the result, I have no doubt, would have been notable. This was not to be, however, and most of the work carried out was of a domestic character, of which I will now give some examples. Stowel Park, a restoration and addition on a large scale for the Earl of Eldon. A special feature of this design is the garden.

Although keenly interested in ecclesiastical architecture, Mr. Belcher had few opportunities in this direction, and the most important designs were never carried out. Among these is the design for the completion of Brandon's Gordon-square church. The Catholic Apostolic Church, Paddington, is another design of that period. It will remind you of Seddon's Sloane-square church, which was erected about the same time. With the exception of one or two small restorations and additions he did no more church work until quite recently.

About the year 1875 Mr. John Belcher, sen., retired from business, and his son entered into partnership with Mr. James W. James. This arrangement continued until 1882, Mr. James continuing the business management of the firm until his retirement in the latter year.

Soon afterwards Mr. Beresford Pite returned to him, after a year's absence as sub-editor of the *Builder*, and in 1885 he became a partner, and much of the work subsequently produced exhibits his influence very strongly. Their conversion from Gothic appears to have taken place about the same time, and the Renaissance soon captivated them. Signs of this change are not wanting in Mr. Belcher's domestic work, and several visits to the Continent seem to have confirmed him in his devotion to the style.

His first important public building—the new hall for the Institute of Chartered Accountants—was won in competition. It was the lighter and more fanciful phase of Renaissance architecture which appealed most to him at this time, and his mind was strongly stimulated by visits to southern Germany and Vienna. The eccentricities of the late Italian work at Genoa also had its effect upon him, and is reflected in the Accountants' Hall.

At the date of its completion in 1891 this building possessed many novel and almost startling features, though they are no longer thought so, and since then many of them have become so familiar by much repetition as to seem almost hackneyed. It attracted a great deal of notice, favourable and otherwise, according to the individual leanings of the critics of those days; indeed, the controversy still goes on.

It is pleasing to have to record that the interior decoration of the Council Chamber of this building is now in progress. It is based upon the lines originally suggested—a repetition of the architecture of the room in the great panels on either side, with subjects of a symbolical character carried round the semi-domes at either end. The work is being carried out by Mr. George Murray, and I am glad to be able to state that it had Mr. Belcher's entire sympathy and approval. It was no small comfort to him in his last illness to know that this building, which I have good reason to believe was his favourite one, was at last to be embellished as he intended it to be done.

While the Chartered Accountants' building was in progress the competition design for the South Kensington Museum was being prepared. The reputation of an architect usually rests upon work which he has actually carried out and left behind complete; but this design, like the first design for St. Paul's in the case of Wren, must certainly be reckoned with in any estimate of Mr. Belcher's work and influence. It gave a fine opportunity for the display of that imaginative and fanciful phase of the Renaissance which he adopted at this period and, I think, has not been surpassed in these qualities by any English architect of our time.

About the year 1890 the office was removed from Adelaide-place to 20, Hanover-square, and with the removal came a change in the character of his practice. For a number of years following he had little work to do in the City, but in another direction he was fully occupied. About the year 1895 Mr. Belcher collaborated with Mr. Macartney and the late Mr. Bradley Batsford in the production of "The Later Renaissance Architecture in England." This was a work which absorbed a great deal of his time and interest, and he frequently referred to this time as one of the happiest of his life. Many were the meetings and conferences and innumerable the drawings, photographs, and sketches passed in review before the final selection was made.

While he was engaged upon this work, in the year 1895, it was, I think, Mr. Beresford Pite who suggested to him that I might have some drawings which were required for illustration. Several were found suitable, and eventually I made a number of others, which have found a place in the book. At the same time I found a good deal of very varied work to do in his office, and in this way a lasting friendship commenced which endured until the day of his death. In 1905 we entered into partnership, and since then worked constantly together.

The leisure which he had enjoyed for several years was interrupted by work on the drawings for the new Town Hall at Colchester. This was won in competition with several other well-known London architects, and was the first of several designs based on decidedly English lines. From this time onward the practice, which was a steadily increasing one, left him little time for further efforts in a literary direction. He found time in 1906-7 to write "Essentials in Architecture," a very opportune work and one which met with an extensive welcome from the Press and public. It was with him a labour of love, and represents very faithfully the principles which he continually strove to put into practice.

Representative works of these years are the Colchester Town Hall; the Tower, Pangbourne; Electra House; Cambridge Town Hall; Cornbury Park, Oxfordshire; and the Ashton Memorial.

Other work of this period includes the Royal London Friendly Society; the reconstruction of No. 45, Belgrave-square; a library in No. 49, Prince's-gate; Mappin & Webb's new premises, Oxford-street; additions to Winchester House, Old Broad-street; and the Royal Insurance Building in Piccadilly.

In the year 1907 he was elected Royal Gold Medallist, and on that occasion Mr. Thomas Collcutt, in the course of his address, gave an excellent *résumé* of his career, which appeared in the Institute *Journal*.

Among the works which are characteristic of these later years are the following:—

The Royal Society of Medicine, in which many of the leading medical associations are housed.

Holy Trinity Church, Kingsway, is another building chiefly interesting for its plan. This was originally intended to be a domed structure executed entirely of ferro-concrete, the main dome being elliptical in shape. Owing to want of funds, however, this had to be given up and a barrel vault of ordinary steel construction substituted. The tower is intended to be a feature of the design, but so far consists of the foundation only—a massive raft of ferro-concrete 5 ft. thick.

The new offices for the Zoological Society in Regent's Park is another building lately finished. The mansard roof was arranged owing to a restriction on the height of the wall by the Crown authorities. The building contains the Council Chamber, library, and administrative offices of the Zoological Society.

A rather unique and interesting structure is the Mappin Terraces, with which, no doubt, most of you are familiar; it owes its inception to Dr. Chalmers Mitchell, of the Zoological Society.

Whiteley's new store is also unfinished, and the effect of its completed form is difficult to estimate. It is almost impossible to get a satisfactory photograph of this building owing to its great length. This is a case in which the London County Council regulation that no floor may be above the level of 60 ft. from the pavement is a great hardship. It makes it almost impossible to construct economically a really convenient store of this magnitude, owing to the immense area which it must necessarily cover. The architectural effect of the façade, moreover, would be immensely increased by the addition of, say, two more stories to the height. This is one of the things they are able to do much more conveniently on the Continent, and particularly in the United States.

Mr. Belcher's connection with this Institute has been a long and honourable one. It began in the year 1869, when he became an Associate. He was elected a Fellow in 1882, and since then has served the Institute, and the profession which it represents, in a multitude of ways.

In 1903 he was appointed a member of a Committee to advise the Government on the conduct of its great building schemes in Parliament-street and elsewhere. He was a member of the Improvements Reform Committee and the London Architectural Vigilance Committee. He was appointed by the Institute to represent them before the House of Commons Committee on Architectural Copyright in 1909, and was one of the Advisory Council to assist the Architectural Association in their School of Architecture, and he was a member of the Advisory Committee for the rebuilding of Regent's Quadrant, whose deliberations resulted in Mr. Norman Shaw's design for the Piccadilly Hotel.

In 1906 he was nominatd to the Board of Experts to inquire into the stability of St. Paul's Cathedral, and was a member of the Committee of Selection for the Shakespeare Memorial.

He was also a member of the International Board of Assessors, appointed to adjudicate upon the designs for the University of California, and was presented with the freedom of the city of San Francisco on that occasion.

Mr. Belcher was endowed with a most receptive and inquiring type of mind New ideas appealed to him irresistibly. In his later years I think he felt that the tradition of English architecture had by no means come to an end at the point where it was left by Soane, and, later, Donaldson and Elmes, but that it might be carried on in a logical and natural way to meet all the demands which modern conditions may put upon it.

He was a draughtsman of no small ability. Several examples of his detail drawings are exhibited here to-night, and there is an excellent one in the Diploma Gallery of the Royal Academy, showing the complete elevation of the Ashton Memorial. His sketch-books are full of charming pencil and water-colour drawings. I remember, years ago, showing one he had given to me to a raw but promising student of the Royal Academy Schools, which extorted the unwilling comment, "Fancy an R.A. being able to draw so well as that!"

He had a great love for music, and was the possessor of a beautiful voice. In his younger days he was an accomplished singer; in fact, he had serious thoughts of adopting music as a profession. He enjoyed the friendship of the late Professor Ella, at whose house he had the privilege of meeting almost all the great musicians of the day when they gathered in London to take part in the Musical Union Concerts at the old St. James's Hall. He also performed in many fine public concerts himself, taking the bass solo parts in "Elijah," "St. Paul," and other oratorios. Indeed, all forms of art appealed to him. As Professor Pite has said in this room, "of all modern architects he may be said to have felt most the breadth of art as a whole, his sympathy being equally with the sister arts of painting and sculpture as with his own art of building."

His modesty and sympathy attracted specially to him those younger than himself, making him a most charming companion and friend, one whose death all who knew him sincerely mourn as a loss to his profession and to his country.

**Professor Beresford Pite,**
in proposing a vote of thanks to Mr. Joass for his paper, said that it was surprising that one who had been so intimately connected with Mr. Belcher as Mr. Joass had been could take so comprehensive a view of his work and so wisely and fairly criticise its tenor. Mr. Belcher's work was as delightful as his humanity. He had had the privilege of his intimate friendship, extending over a period of many years. What he thought was one of the greatest of Mr. Belcher's gifts was his wide sympathies and power of assimilation of what was best and responding to new influences. They had both been affected by the Renaissance movement at about the same time. What Mr. Belcher would have developed into if he had had to go through the five years' course prescribed by the Board of Architectural Education was an interesting subject for speculation. He could not imagine him as settling down to follow the strict routine prescribed.

**Sir W. Plender**
seconded the motion, and expressed his pleasure in the paper they had listened to. He found it difficult to express his admiration for Mr. Belcher and the happiness and pleasure which the Chartered Accountants' building gave to him daily, and would give to all in the years to come. He was glad that they had been able to complete the decoration of the Council Chamber in the manner intended by Mr. Belcher. He was not capable of speaking of the professional skill and technical ability shown in Mr. Belcher's work, but he could bear testimony to the warmth of human sympathy and love which were characteristic of the man. In reference to Mr. Belcher, it might be said that great thoughts came from great hearts.

**Sir Aston Webb,**
in supporting the motion, referred to his intimate associations with Mr. Belcher and to the fact that he often competed against him, but whatever resulted nothing affected the personal pleasure of their intercourse. When he was elected an Associate by the Academy his first wish was that Mr. Belcher might shortly follow him, as he did. His modesty was so strongly marked that he, and others, with difficulty persuaded him to accept the President's chair of the R.I.B.A., but his fitness for that capacity was very great, as was evidenced by the success of the International Congress of Architects held in London and the union of the ranks of the profession by persuading those who had remained aloof from the ranks of the Institute to join it. His wide grasp of architecture was shown by his works, one of the last of which was the town-planning scheme proposed for the city of Bath. While it was important that architects should consider sculpture as Mr. Belcher did, it was a pity that sculptors did not study architecture more than they did. It was fitting and appropriate that they should have such a paper as had been read, as it would have been impossible to overcome Mr. Belcher's modesty sufficiently during his lifetime to obtain such a description of his work as they had had.

**Sir Goscombe John**
bore testimony to the qualities of Mr. Belcher's architecture, which, he said, sculptors felt was curiously sculpturesque and adapted to show how the two arts could be employed together, though he must dissent from the dictum that the greatest sculpture was necessarily connected with architecture, and he instanced the work of the mediæval imagers as proof to the contrary.

**Sir Edmond Gosse**
spoke of the great appreciation he felt for Mr. Belcher. Mr. Hamo Thornycroft had told him, in 1878, that Mr. Belcher was the one architect who understood sculpture. He was struck by his singular modesty and his singular inability to speak out, which had been spoken of as being characteristic of the poet Gray. He was one of the most delicate and sympathetic artists the nineteenth century had produced.

After a few words from Sir Ernest George and another speaker the President briefly addressed the meeting and Mr. Joass briefly acknowledged the vote of thanks.

## ROYAL ACADEMY SCHOOLS:
### LIST OF PRIZES AND PRIZEWINNERS.

Landscape painting—"Stepping Stones," Creswick prize (£25) and silver medal, not awarded.

Design for the decoration of a portion of a public building—"A Harvest Procession," first prize (£30) and silver medal, G. V. Meredith Frampton; second prize (£10) and bronze medal, Alfred Clive Gardiner *Prox. Acc.*, Sydney Ivon Hitchens.

Design in monochrome for a figure picture—"Joseph presenting Jacob his father before Pharaoh" (Genesis, chap. xlvii., 7), Armitage prizes, first (£30) and silver medal, not awarded; second prize (£10) and bronze medal, Alice Dorothy Cohen.

Composition in colour—Prize (£5) and silver medal, Gladys Marguerite Baker; prize (£5) and silver medal, Marjory Florence Mostyn.

Cartoon of a draped figure—"Urania," prize (£25) and silver medal, James Williams.

A painting of a figure from the life—First prize (£10) and silver medal, Joannes Gaetanus A. Pisani; second prize, bronze medal, Winifred Broughton Edge.

A painting of a head from the life—First prize (£5) and silver medal, Harold Williamson; second prize, bronze medal, Hilary Francis C. Skinner; *Prox. Acc.*, Horace Edward Quick.

Perspective drawing in outline (open to painters and sculptors only)—"The staircase of the Royal Academy from the vestibule, introducing figures," prize (£5) and silver medal, Winifred Beatrice Hardman.

Set of four drawings of a figure from the life—First prize (£15) and silver medal, Evan John Walters; second prize (£10) and bronze medal, Joannes Gaetanus A. Pisani.*

Set of three studies of drapery—Silver medal, not awarded.

Drawing from the antique—Prize (£5) and silver medal, Dorothea Lake Lyster; honourable mention, Winifred Broughton Edge.

Painting from still life—Prize (£5) and silver medal, Dorothea Lake Lyster.

Model of a design—"Truth Overcoming Falsehood," first prize (£30) and silver medal, Edgar Allan Howes; second prize (£10) and bronze medal, Alexander Stiles.

Two models of a bust from the life—First prize, silver medal, Peter Induni; second prize, bronze medal, not awarded.

Model from the antique—Prize (£5) and silver medal, no competition.

Design containing figure and ornament—"Caryatid for a Chimneypiece," prize (£5) and silver medal, no competition.

Set of three models of a figure from the life—First prize (£15) and silver medal, Joseph Herman Cawthra; second prize (£10) and bronze medal, Thomas Humphrey Paget.*

Design in architecture—"A Picture Gallery in a Public Park," travelling studentship (England), £60, tenable for one year, William Henry Hamlyn.

Set of architectural drawings—"The River Front of Somerset House," first prize, silver medal; second prize, bronze medal, no competition.

An architectural design—Prize (£20) and silver medal, James Mollison Wilson.

An architectural design (first term students only)—First prize (£15) and silver medal, Harold Clayforth Mason; second prize (£10) and bronze medal, James Gibson Swinton.

Perspective drawing in outline (open to architects only)—"The West Front of St. Mary-le-Strand," silver medal, no competition.

Original composition in ornament (open to architects only)—Prize (£5) and silver medal, James Mollison Wilson.

Architectural design with coloured decoration—"The Wall of a Music-room with an Apse," £5 and silver medal, not awarded.

Landseer scholarships in painting and sculpture, of £40 a year each, tenable for two years, have been awarded—In painting to Joannes G. A. Pisani and Hilary F. C. Skinner; in sculpture, to Edgar S. Frith and Thomas H. Paget.

## AUSTRIAN OAK.

THE Earl of Selborne presided at a meeting held last Friday at the Imperial College of Science at South Kensington, which was attended by representatives of the Press and others interested in the subject of timber to hear a paper read by Professor Percy Groom on "Austrian Oak." Professor Groom said:

"When I was invited to draw up for your consideration a Report dealing with the utilisation of Austrian oak in this country it seemed that the most useful evidence that I could supply would be that dealing with:—

1. The relative merits of the different kinds of oak obtainable in this country and subservient to the same purposes as Austrian oak.

2. The economic significance of the great demand for Austrian oak in this country.

Also, in order to place before you concrete evidence bearing on the matter, it seemed advisable to supply for inspection a number of authentic specimens of the different kinds of oak considered in this Report.

The economic aspect of the question is neither narrow nor small; in particular it is not a mere matter of temporarily depriving an alien enemy of a market for a certain product—Austrian oak. The wider economic significance of the question is rendered clear by the fact that in a majority of cases, where oak is used in the woodwork of better-class buildings in this country, architects specify that the oak shall be Austrian. Consequently if there be available in this country other kinds of oak equal in merit to, but cheaper in price than, Austrian oak, then the custom of demanding Austrian oak in contracts involves an undue inflation in its price and waste of our national financial resources.

Austrian oak is demanded where lasting decorative effect is the sole end to be attained. The question of the strength of the wood is therefore irrelevant, for the high price of Austrian oak at once excludes it from use for mere constructional purposes.

The kinds of oak-timber regularly available in this country and suitable for decorative woodwork are: (1) British, (2) American, (3) Russian, (4) Austrian, (5) Japanese.

American oak, as a rival of Austrian, can be instantly dismissed. For although some of it is very boldly figured by reason of its deep silver grain, yet the supplies reaching this country are so mixed and varied as regards tint

* Disqualified owing to having received the same prize before.

and texture that it is not practicable to secure sufficient uniformity of appearance for better-class work. Moreover, in these timbers, derived from several species of oak (*Quercus alba*, *Q. rubra*, *Q. velutina*, *Q. pallstris*, and others), sap-wood is frequently included. American oak is therefore not an adequate substitute for Austrian, and is properly relegated to lower-class woodwork.

In order to appreciate the relative merits of the four remaining kinds of available oak-timbers it is necessary to consider briefly their structure and the two modes of sawing them. The main mass of the wood is traversed at intervals by ribbon-like structures running across the grain and directed toward the actual centres of the trunk. When the trunk is cut down the middle these radially arranged ribbon-like structures, or medullary rays are visible as glistening bands constituting the so-called silver grain. It is not possible, however, to cut the cylindrical trunk into boards whose sides were all originally directed to the centre; the nearest practicable approximation has to be adopted. The result is that what I will term the middle boards show relatively long and deep and therefore relatively bold silver grain; at increasing distances the boards on the two sides show shorter and often shallower silver grain. The result is that when two kinds of oak differ in the boldness of their figure marginal boards of the bolder-figured kind may be far inferior in silver grain to the more central boards of the other. Hence, although Austrian oak generally appears to be somewhat bolder figured than Russian and Japanese, yet its marginal boards may be inferior in figure or indistinguishable from more medium boards of the other two. In fact, if the boards be cut too far from the middle ones they are very poor in figure and become almost indistinguishable from boards cut in the manner about to be described. Boards cut so as to show the silver grain are said to be "cut in the quarter," or "quartered," and constitute genuine "wainscot" oak.

Boards cut in a direction at right angles to that in which quartered oak is are "bastard-sawn"; they are dull, in so far as they show no silver grain, and are described as "plain oak."

Another character of wood must be mentioned before discussing the relative merits of the different oaks. When drying, including seasoning, wood shrinks least lengthwise, and in a transverse or cross direction it shrinks much less in a radially than in a direction of the annual rings. The result is that boards of quartered oak shrink less in width and warp less than do bastard-sawn boards, and the nearer the quartered boards are to the middle one the more marked the lack of shrinking and warping.

Hence, in comparing the shrinkage and warping of boards, comparison must be made between similarly cut boards; and, for instance, one must not condemn British oak because bastard-sawn boards tend to warp and consequently crack in drying more than do Austrian boards cut on the quarter.

Of Austrian oak the salient merits are that it is mild, of even, open grain, easy to work, and obtainable in boards that are of considerable width yet free from defects. The true wainscot wood of the best quality shows bold figuring due to deep silver grain, and is unsurpassed by others in this respect.

Straight-grained British oak is not only exceptionally strong and hard, but shows silver grain as handsome as that of Austrian oak. The fine decorative effect of such British oak is demonstrated not only in historic buildings, but also to an equal degree in modern woodwork, thus proving that the appropriate kind of wood is still obtainable. The conclusions concerning the decorative value of British oak will be given later, when other classes of the wood are considered.

In Russian oak, imported from Riga, Dantzic, Stettin, and Odessa, the silver grain is generally somewhat shallower and less bold than that of Austrian (though, as already pointed out, this holds good only for corresponding boards of the two opposing kinds). But, inasmuch as some persons prefer the shallower silver grain, this cannot be counted wholly as a disadvantage. It should, however, be pointed out that the boards are so cut that the majority show no silver grain near one edge, which therefore must be cut off to secure a wholly figured panel. Or sometimes, in order to secure wider boards, the Russian log is cut in such a manner that all the resulting boards show nearer one edge a plain band of wood that is actually "bastard-cut" and devoid of silver grain. But when Russian wainscot oak is cut to the best advantage it may *in situ* be indistinguishable from Austrian oak; or, if showing a difference from this, is regarded as superior or inferior according to the beholder's taste.

While British, Russian, and Austrian oak-timbers owe their strong likeness to one another largely because they are derived from one and the same species or two very closely allied species (or co-species) of oak, Japanese oak as at present imported is obtained from at least two entirely different species. Despite this fact, Japanese oak-timber shows so strong a likeness to the European oak-timbers mentioned that in completed woodwork it may readily be mistaken for one of these. Derived from old forest trees, Japanese oak has straight, even grain, and narrow, very uniform annual rings, which nevertheless (in frequent contact with narrow annual rings of European oaks) have a good percentage of wood-fibres that impart strength and hardness to the wood. Japanese oak certainly has great power of resisting shrinkage, warping, and cracking that are liable to occur in oak during seasoning and drying. For I have seen cases of woodwork in which it was exposed to alternate dryness and moisture, and also in which it was exposed to a severe test as regards dryness and heat (associated with a radiator very close to the wood in a draughty passage). The silver grain, I understand, is, on the whole, a little less bold than that of Austrian oak, yet is sufficiently bold to cause the wood to yield handsome wainscot panels, practically indistinguishable *in situ* from Austrian oak panels.

As regards plain (bastard-cut), straight-grained oaks of all four kinds under discussion, it is not possible by mere inspection to distinguish these from one another when *in situ* (though this is not true when the magnifying lens and microscope are used). It is now necessary to consider some special varieties of oak-timber so far passed over.

Set in three classes by themselves are certain kinds of British oak.

In the first place there is the highly decorative burr-wood, which, however, is too scanty in quantity and too costly to be regarded as other than a furniture wood; it is therefore not a rival of Austrian oak.

Abundant, on the other hand, is a second type of British oak-timber, which is obtained from trees grown in well-lighted situations, and has, in place of straight grain and even texture, twisted grain and varied texture (due especially to inequality in width of the annual rings). The cut wood owes its decorative and varied "figure" not merely to the depth and abundance of the silver grain, but also to the tortuous and obliquely-cut grain. This oak-wood, which can be obtained at a lower price than that of Austrian oak, I regard as the finest decorative oak of ordinary colour that is procurable. Yet where the artistic scheme demands greater uniformity or austerity of design a straight-grained oak will be selected.

Absolutely without rival for richness of colour is a third kind of British oak—the famous British "red" or "brown" oak—which is unobtainable from any other country. This unique wood, I understand, can be obtained at present at a price scarcely exceeding that of Austrian oak, which cannot compare with it as regards colour.

In regard to British oak, several circumstances militate against its use. They are:—

1. The supply is irregular and uncertain. This fact, in turn, reacts on the demand and on the economic policy of the timber merchants in regard to purchase and storage for seasoning. I understand that there is no shortage of large-sized oak-trees in this country, and that if the demand were more continuous there would be a satisfactory supply.

2. A considerable amount of British oak-timber has twisted grain and knots, and architects frequently refuse to accept such wood for decorative purposes, regardless of its most attractive appearance.

3. Partly connected with this last is the stigma under which British oak rests in regard to its liability to warp, crack, and shake. It is true that wood with twisted or irregular grain is, during seasoning, more liable to crack than is straight-grained wood, but with careful seasoning this tendency can be guarded against. Moreover, when the wood is once fully seasoned for indoor use, such oak in internal woodwork will endure indefinitely without shrinking appreciably or cracking. That this is the case is demonstrated by the superb modern wood panelling in the Court of Criminal Appeal. But oak wood of this kind is not so well suited to alternate exposure to moisture and draught.

4. British oak is apt to be more wasteful when cut up, and is harder to work than is the case with the other oaks mentioned. Its wastefulness will doubtless influence the price paid, but will not otherwise affect the consumer. And, as regards difficulty in working, I understand from practical men that this is largely due to lack of practice on the part of workmen, and that country joiners, who are more accustomed to the use of British oak, readily become adepts in dealing with it.

### Conclusions.

The following are the conclusions to be drawn from the facts and considerations already recounted as to the relative merits of the different kinds of oak available in this country and suitable for the same and sole purpose as Austrian oak—namely, for decorative woodwork:—

1. From the point of view of colour, the supreme place is taken by British "red" or "brown" oak, a unique wood which at present somewhat exceeds Austrian oak in price.

2. Of oak woods normal in colour, the one giving the highest and most varied decorative effect is that abundant form of British oak which has twisted, irregular grain, including knots.

3. Where a more uniform scheme of decoration is required, but the satiny surface of "silver grain" is desired, the choice can be made among five kinds of straight-grained true (figured) "wainscot" oak. Of these American oak is excluded from better-class work by reason of its mixed nature and other structural defects. Among the remaining four kinds—British, Russian, Japanese, and Austrian—I can make no distinction. For, although each of these is apt to possess certain characteristics of its own, yet many specimens of all four kinds can be found presenting such similarities to each other as to render it difficult or impossible to recognise their precise origin. In such cases the magnifying lens and microscope in the hand of an expert alone can shed critical light on the identity of the specimens.

3. When a still more uniform and cheaper scheme of decoration is required there is available the straight-grained, plain, or bastard-sawn wood (not showing the glistening silver grain) of the four last-named kinds of oaks. Again, there is no reason, other than economic, to give the preference to any one of these for decorative purposes.

This double conclusion to make no distinction as regards suitability for indoor woodwork among the three European and Japanese oaks is fortified by the fact that even when Austrian oak is specified in contracts the wood actually used by the builder is very often wholly or mainly not Austrian. This fact alone proves that in Great Britain there are other oak-timbers cheaper than Austrian oak, yet sufficiently resembling it to satisfy or deceive the architect.

As regards durability in relation to decay, there is no doubt that all four kinds of oak under discussion would equally be attacked by the worst dry-rot fungus (*Merulius lacrymans*). Nor is there any evidence available that there is any difference in their power of resisting "worm-hole" attack. The silver-grain effects are durable in all four.

To conclude. From the point of view of durable decorative quality, Austrian oak does not deserve its present superior reputation and preferential treatment. From an economic standpoint the cheaper British, Russian, and Japanese take precedence. While on political and economic grounds Austrian oak should at present be excluded, and first choice given to British; while of the two remaining kinds, which are products of our Allies, Russia and Japan, preference might be accorded to the latter, not alone because Japanese oak is cheaper, but also because the merits of the wood as now imported need wider advertisement.

May I venture to give two partly relevant addenda? In the first place, the present position of this country as regards the supply of timber emphasises the fact that, through our continued neglect of afforestation, we have not only to import oak that could profitably be grown on better-class soils, such as those of English estates, but we have also to import fir-wood at an annual cost of between twenty and twenty-five millions, although such wood could be grown on inferior soil too poor for profitable agriculture.

As a second addendum I would like to call attention to the fact that much of the decorative and furniture wood purchased from foreign countries could be profitably replaced by less-known woods now growing in the Colonies and self-governing countries of our Empire. Such a substitution would be feasible were the scheme aided by true enterprise on the part of the governments concerned, who would favour the substitution and proper advertisement of the quantities of the woods concerned."

A vote of thanks was proposed to Professor Groom for his interesting lecture by Mr. H. W. Wills, which was seconded and carried unanimously, the meeting being much interested in a collection of samples of various kinds of oak lent for the occasion by Professor Groom.

## ARCHITECTURAL SOCIETIES.

### Sheffield Society of Architects: Belgium's Architecture.

Mr. C. F. Innocent delivered a lecture, entitled "An Architectural Ramble in Belgium," before the Sheffield Society of Architects and Surveyors at the University, Western Bank, on the 10th inst.

The Chairman, Mr. A. F. Watson, expressed the Society's regret at the death of Mr. Swaffield Brown.

Mr. Innocent said that, as he did not know what would be left of the Belgian buildings after the war, he proposed to speak of them in the past tense. Nowhere in the world outside Italy was there so much good old work in so small an area as in Belgium. The architecture of Belgium was that of towns, not of country houses. The lecturer pointed out that the history of Belgium was one long alternation of work and prosperity with loot and destruction, and for that reason he saw some hope in the present state of affairs, though if the Germans were driven from the land he anticipated terrible destruction of buildings. The ornateness of the church interiors and the florid carvings came in for special mention, and Mr. Innocent contended that the architecture of the cathedrals was inferior to the English cathedrals and far inferior to the French. Incidentally he held that times of war had been good for art. Belgium, he said, had been the most storm-tossed country in Europe for centuries, and yet through all these years there had been a production of art that possibly no other country had seen. Photographic slides were shown contrasting the former stateliness of Belgian buildings with their abject ruin after they had been pounded by the German guns.

### The Architectural Association of Ireland.

The annual smoking concert of this Association, this year in aid of the special Fund for Architects, was held at the Central Hotel, Dublin, on the 9th inst. The President, Mr. Harry Allberry, A.R.I.B.A., occupied the chair. The architectural profession in Dublin numbers many musicians and singers in its ranks, and amongst those who contributed to the success of the concert were Messrs. F. G. Hicks, A. E. Jones, L. F. Giron, W. N. Spence, and R. Caulfeild Orpen, President of the R.I.A.I., who, in a series of lightning sketches, depicted many of the persons prominent at the moment in the Press. Numerous well-known Dublin artistes also kindly assisted.

## CORRESPONDENCE.

### The Architectural Association Meeting.

SIR,—I notice in your report of the meeting of the Architectural Association on Monday, the 7th inst., you state that I "called attention to the suggestion of Professor Lethaby that Westminster Abbey was largely influenced by Reims." It was not I, but Mr. Yates, who made the remark, and I understand from Mr. Yates that he mentioned Scott's name and not Professor Lethaby. A. H. BELCHER.

### Building Materials, etc., in Devonshire.

SIR,—I have been a constant reader of your paper for many years, and might I, through the medium of your columns, ask you one or two questions about building materials, etc., in Devonshire, which no doubt would be interesting to other readers besides myself?

Are there any districts in Devonshire that build in bricks—not facing bricks, but insides—suitable for rough-cast? I should be glad if you could give me any locality of any such district?

I understand that building is cheap in Devonshire; of course out of the fashionable parts. And are there red tiles used in that district?

Is land, generally speaking, cheap? I do not mean, of course, in a big town but the rural districts, such as the outskirts of a small country town or in a village. The particular district I should wish to be in would be about half a mile from the sea and on high ground, and perhaps about a mile from a town of about eight or ten thousand inhabitants, but must be near the sea. One hears so many opinions on this subject that I should like to get an opinion from somebody that knows. B. G.

[*** Several other letters are held over until next week for want of space.—ED.]

## COMPETITION NEWS.

*It must be understood that the following paragraph is printed as news, and not as an advertisement; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.*

*The list of current Competitions is printed on page 585.*

### New Buildings, Glasgow.

The Improvements Committee of Glasgow City Council has had under consideration a Report by Mr. A. N. Paterson, A.R.S.A., and Mr. A. B. M'Donald, the City Engineer, on the competitive plans sent in for the buildings proposed to be erected at the corner of Trongate and High-street. The assessors have given the design No. 18 first place, and designs No. 14 and 12 the second and third places respectively, and recommend that the respective premiums of £50, £30, and £20 be paid to the authors. According to the Report, the plan selected for execution is so arranged as to provide a large and unrestricted floor area, and such as will work in satisfactorily with the buildings already erected on either side. The elevation, while complete in itself, composes admirably within the cross steeple, and without sacrificing in the matter of lighting, etc. the practical requirements of a shop and warehouse building. The scheme adopted for the retention of the cross steeple and its support in the isolated position it will occupy is both sound structurally and of excellent effect architecturally, while the proposed cross is also successfully treated in the traditional manner. The cost of this scheme is estimated by the measurer at £28,512, including £2,500 for the cross and steeple, and compares very favourably with the others submitted. Nos. 14 and 12 are also able designs, each marked by special qualities. The Committee recommends the Council that, subject to the restrictions contained in the conditions of the competition, the author of the design placed first be employed as architect for the buildings upon the conditions therein mentioned, which provide that in the event of the author of any premiated design being employed as architect no premium will be paid to him; the premiums £30 and £20 be awarded to the authors of the designs placed second and third, respectively; and that the plans of the buildings placed first be adopted, subject to any alterations which the Corporation may consider desirable to make thereon. At a meeting of the City Council the envelopes containing the names of the successful competitors were opened. The successful competitors are:—(1) No. 18, Messrs. Honeyman & Keppie, Glasgow; (2) No. 14, Messrs. John M'Kissack & Son, Glasgow, and Mr. William Friskin, Kensington Park-road, London; and (3) No. 12, Mr. Alexander D. Hislop, 124, Vincent-street, Glasgow.

## GENERAL NEWS.

### The Christmas Holidays.

Owing to the Christmas holidays, we go to press on *Tuesday* next week, and to ensure attention all communications should reach the Editor not later than 2 p.m. on that day.

### Mr. A. G. R. Mackenzie, F.R.I.B.A.

We learn that Mr. A. G. R. Mackenzie, F.R.I.B.A., who went to the front with the London Scottish, was severely wounded in the fight on November 1. We regret to hear that he has now had to undergo the amputation of his right leg. His friends will be glad to know that he is making good progress.

### Symbolism in Church Architecture.

Count G. N. Plunkett, H.A.R.I.B.A., lectured last week in St. Patrick's College, Maynooth, on "Symbolism in Church Architecture."

### Civic Survey Work.

An exhibition of drawings, forming part of the London section of Professor Geddes' collection, was opened at the R.I.B.A. Galleries on Tuesday. These drawings have been prepared and collected in order to replace a portion of Professor Geddes' collection lost in the *Clan Grant*, one of the *Emden's* victims. Mr. H. V. Lanchester, Vice-President R.I.B.A., gave a brief paper on "Civic Survey Work," illustrated by these drawings, on Thursday. The Exhibition will remain open till December 19.

### No Port for Nottingham.

The proposal to spend £150,000 on improving the navigation of the Trent and converting Nottingham into a port has been negatived by the Corporation, the necessary majority for seeking Parliamentary powers not being forthcoming.

### Philadelphia.

"Our Philadelphia" is the title of a book just published by Messrs. J. B. Lippincott Company, of London and Philadelphia. The work is by Mrs. Elizabeth Robins Pennell, and it is illustrated with 105 special drawings by Mr. Joseph Pennell. Most of these are of historical buildings of Philadelphia.

### "Who's Who in Art."

Sir Isaac Pitman & Sons, Ltd., have in preparation a "Who's Who in Art" on the lines of the two volumes already published—"Who's Who in the Theatre," now in its second edition, and "Who's Who in Music," about shortly to appear in its second edition. The forthcoming work will give the main facts in the careers of artists of distinction all over the world, together with additional matter relating to art in general.

### Northampton Polytechnic Institute.

Lord Moulton, in distributing the prizes at the Northampton Polytechnic Institute, Clerkenwell, on Friday last week, said that if England was to hold her place in peace among the nations her people—and above all those who ruled the business houses—must realise that in modern times intellectual mastery of a subject was necessary before good work could be done and before a man could try to be original. He looked to such students as he saw before him to lead the country in this new path of industrial life. If that were done there was no department of industry in which England would not show her superiority to Germany.

### War on German Trade in Belgium.

The Belgian Chamber of Commerce in London (Incorporated), 24, St. Dunstan's-buildings, St. Dunstan's-hill, E.C., invite the attention of English manufacturers to the opportunity afforded at present in making arrangements to be represented in Belgium. Amongst the good class of refugees there are a number who, before the war, acted for German firms and who are wishful to replace these makers by English manufacturers of similar goods. These refugees are here unoccupied and would be very pleased to spend their time in acquiring the knowledge of the lines they will be called upon to introduce later on. The Belgian Chamber of Commerce in London is at the disposal of manufacturers to put them in communication with suitable applicants for such posts.

### A New Dublin Cathedral.

Roman Catholic Dublin's desire for a great city cathedral is, says the *Times*, likely to be satisfied at last. The present pro-Cathedral in Marlborough-street has never been regarded as anything more than a stop-gap. The two fine cathedrals in the city, St. Patrick's and Christ Church, are, of course, the property of the Church of Ireland. Some time ago the Corporation acquired a site at Ormond Market on the Northern Quays for the erection of workmen's dwellings. The scheme was never popular, and is open to grave objection. The Roman Catholic Archbishop of Dublin has now offered to purchase the Ormond Market area as a site for a cathedral at the amount which the Corporation paid for it. The suggestion for a Roman Catholic Cathedral at this spot came from Professor Patrick Geddes, who advocated a new artery of traffic which would bring the two Protestant Cathedrals into line with a new Roman Catholic building.

## Leading Contents.


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## ILLUSTRATIONS.

### The Duomo, Bari, and Castello dell Monte.

THESE are two more of a series which we are giving of architectural subjects from Southern Italy.

### Elementary School, Chesterfield.

THE accompanying plans were designed to secure as far as possible the advantages of an open-air school combined with the largest amount of protection from cold winds in inclement weather. With this object in view the classrooms and the assembly halls are arranged to form three sides of a quadrangle open to the south. Within this sheltered area, protected from the north, east, and west winds, the sides of the classrooms can be fully opened by means of folding-doors giving on to a verandah. The latter protects the classrooms from rain and provides a covered way to the various rooms and the assembly hall. The verandah also serves the purpose of a covered playshed. The upper part of the folding-doors are glazed and are fitted with hoppers to secure cross-ventilation whenever it is necessary to close the doors in rough weather.

Centre-hung windows are provided over the folding-doors so that the upper part of the classrooms can be rapidly air-flushed and sunlight admitted to the rooms.

Curtains or outside sun-blinds will be fitted to windows facing south and west to prevent strong sunlight beating directly on to the children's heads.

The classroom windows to the outer walls of the quadrangle will open fully, with hoppers below (to pass the checks) and centre-hung sashes above. These will give, when fully opened, 2 sq. ft. of ventilating area per child, and will provide the required volume of air when the latter is only moving at the rate of ½ ft. per second.

By means of these arrangements natural ventilation can be maintained under very divergent climatic conditions. With strong winds from any quarter the doors or windows on the windward side of the classrooms can be closed and the opposite doors or windows respectively remain open. In very severe weather both sides can be closed and the hoppers alone relied upon for cross-ventilation.

*Assembly Hall.*

The assembly hall is planned independently of the classrooms, and will be more useful for teaching purposes, as it is not a passageway to other rooms. It has large opening French windows on each side under verandahs, with swing lights immediately over the latter; and is so arranged that it may be built or omitted from the scheme as the Education Committee may wish.

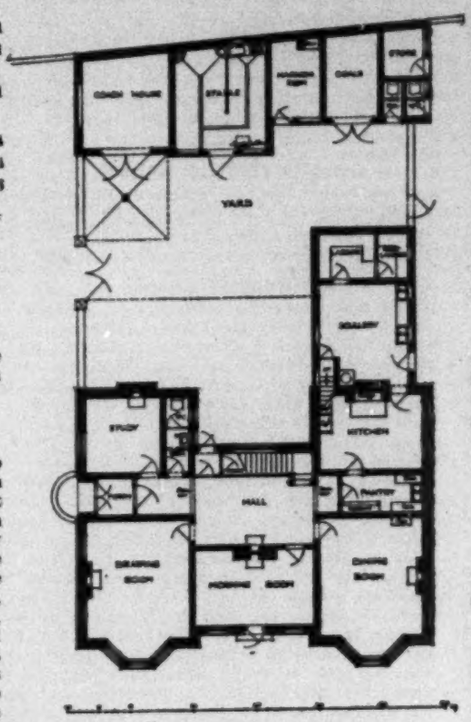
*Heating.*

It is proposed to warm the buildings by means of low-pressure hot-water apparatus with a heating surface of not less than 35 sq. ft. per 1,000 cubic ft. of contents. The apparatus will be designed to give a satisfactory temperature without the need for supplementing the heat by open fireplaces, thus saving the trouble and expense of the latter.

P. B. HOUFTON.

### House at Sandal, near Wakefield.

THIS house stands in a prominent position near the main road from Wakefield to Barnsley, and has an extensive view towards the south-west. On the east is a line of lofty trees, belonging to the adjoining estate. The outer walls are of Messrs. Akeroyd's brown Woodkirk stone, with dressings of Howley Park stone, lined with brick. The roofs were to be covered with Westmorland slates in the first design, but red tiles were eventually ordered. A slight addition to the height of the rooms on both the principal floors made during building has altered the general proportions as indicated on the perspective drawing, and the Daneshill tile quadrant coping above the wall of the stable-yard has been replaced by a stone balustrade. The internal arrangements call for no comment. The larders are lined with white glazed bricks and the stable with brown glazed bricks. The general contractors for the house and stables, cottage, greenhouses, boundary walls, etc., were Messrs. Higgins & Pashley, of Wakefield, and the architect was Mr. Martin Briggs, A.R.I.B.A., of 7, Southampton-row, W.C.




**House at Sandal, near Wakefield.**
Mr. M. S. Briggs, A.R.I.B.A., Architect.

### House at Farnham Common, Bucks.

THIS house stands on a nearly level site bordered by an extensive pine-wood, and has an open view to the south and west. It was specially desired that no space should be wasted in the entrance hall, which has thus been reduced to the minimum size. The drawings represent the architect's original design, but this has been considerably departed from, in matters of detail, during building. The walls externally are faced with thin dark hand-made sand-faced bricks supplied by Messrs. Laurence, of Bracknell, and the tiles are of similar texture and colour, and are supplied by the same firm. It was intended that the window-frames externally should be painted white, but they have been treated with a dark-brown stain instead, at the owner's wish. A feature of the interior is the barrel-vault over the corridor on the ground floor. The architect is Mr. Martin S. Briggs, A.R.I.B.A., of Southampton-row, W.C.

### The Chancel, All Saints' Church, Hawton, Notts.

THE church exhibits a large variety of styles, chiefly early English, and consists of chancel, nave with aisles, south porch, and western tower. The chancel, from its style, is considered to have been designed by the same architect as Heckington Church, Lincolnshire, and is wholly of the Decorated period, having two windows and a doorway on the south side, and on the north side an elaborate eastern sepulchre in three compartments.

In the recess and above the pedimented canopy is a representation of the Ascension, and the base displays, within four enriched arches, the figures of four sculptured groups representing the sleeping Soldiers at the Tomb. Adjoining the Easter sepulchre to the west is a monumental arch, under which lies the figure of a knight—Robert de Compton, founder of the chancel, *ob.* 1330. The arch is very deeply and richly moulded, with fine hanging tracery and an ogee canopy with peculiarly rich crockets; close to the monument is a doorway, formerly the entrance to a chantry church now destroyed. The doorway is bricked up.

On the south wall of the chancel are a three-stall sedilia and a double piscina. The sedilia has an elaborately-carved canopy, with a representation of the coronation of six bishops and martyrs. The central column of the piscina is missing.

The whole of the work is in an excellent state of preservation, with the exception of the sculptured groups of figures, which were much mutilated by the Parliamentary forces in the Civil War. FRED. E. COLLINGTON.

[We may add that Mr. Collington's drawings obtained a first prize some time ago in a competition held by the Nottingham Architectural Society. Mr. Collington writes: "The original drawings (2-in. scale details) were awarded a gold medal some years ago by the South Kensington authorities."—ED.]

## MEETINGS.

FRIDAY, DECEMBER 18.

*Institution of Mechanical Engineers.*—General meeting. 8 p.m.

MONDAY, DECEMBER 21.

*University Extension Lecture (at the Victoria and Albert Museum).*—Mr. Banister Fletcher on "Military Architecture in France." 4.30 p.m.

## BOOKS RECEIVED.

GAS SUPPLY IN PRINCIPLES AND PRACTICE. By W. H. Y. Webber. (London: Whittaker & Co. 3s. 6d. net.)

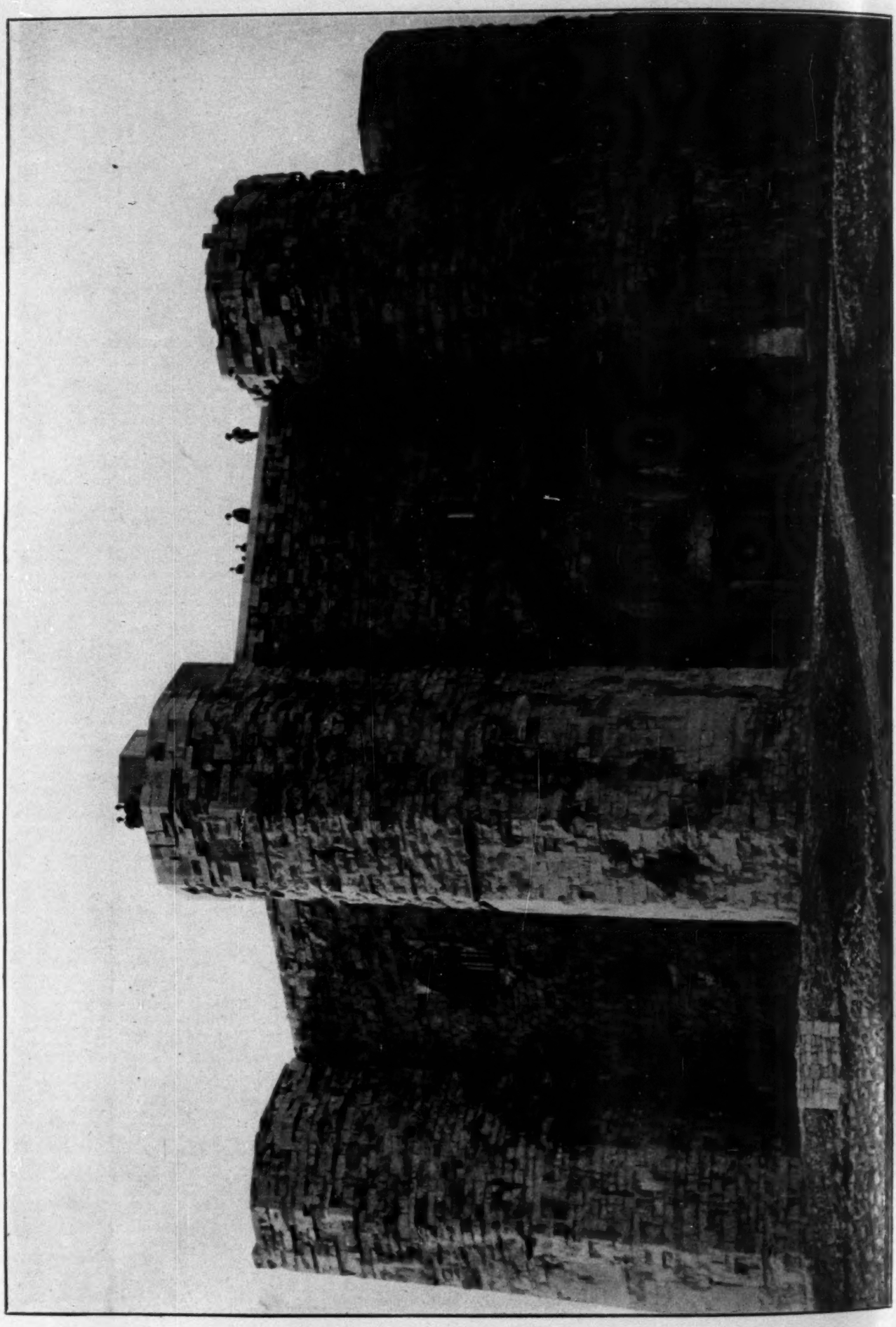
OUR PHILADELPHIA. By E. Robins Pennell and Joseph Pennell. (Philadelphia and London: J. B. Lippincott Company. 30s. net.)

## FIFTY YEARS AGO.

### The Building Trades.

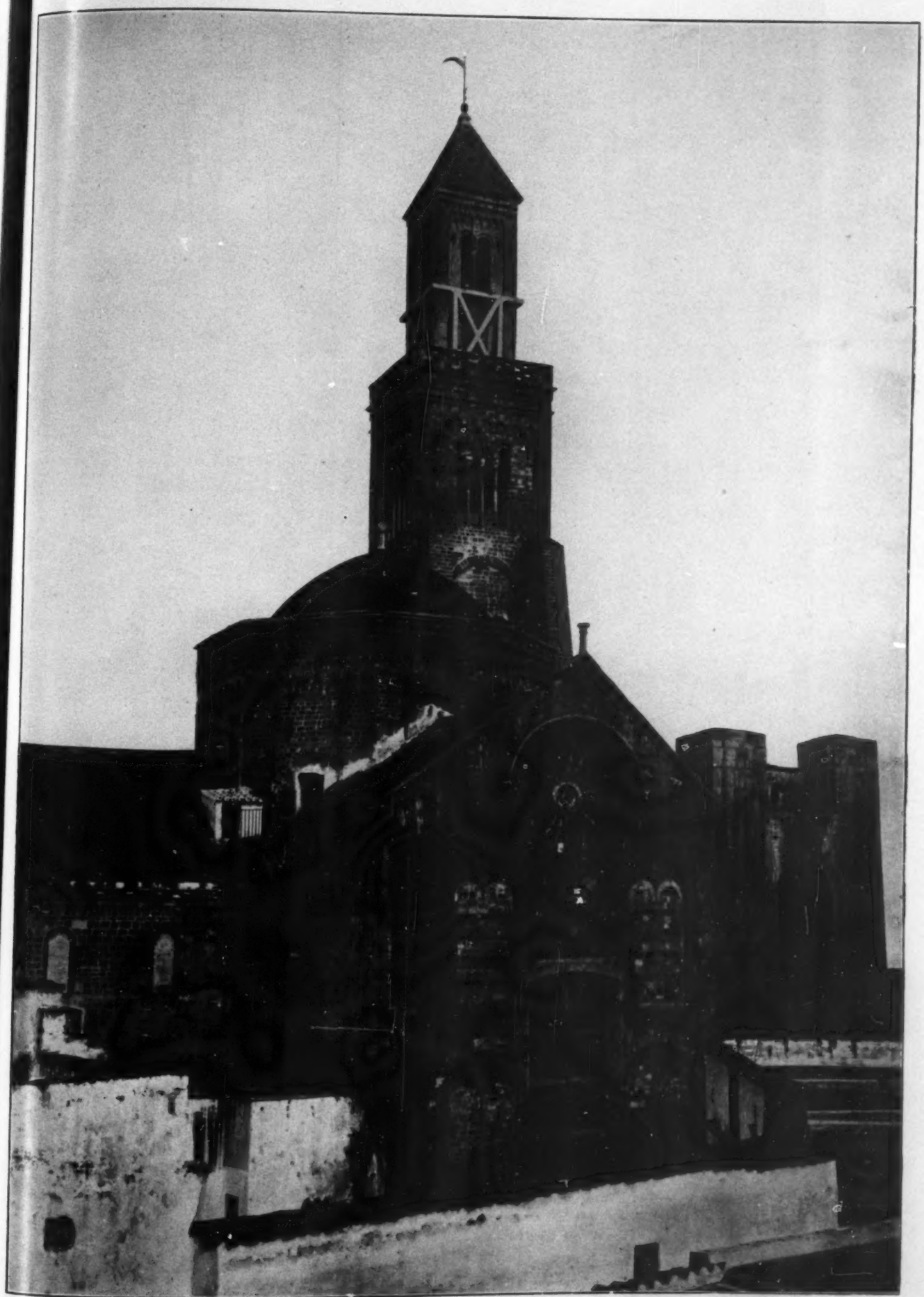
THE Birmingham carpenters and joiners feel much aggrieved with the "discharge note" of the master builders, and we think they have good grounds for it. No doubt the masters have been instigated by the doings of the men throughout the country; but although, in some cases, the men, in their endeavours to make themselves as independent as possible of the masters, have struck out wildly, and shown a disposition to be masters themselves rather than servants, still there is no doubt that the masters, by resorting to such a measure as the discharge note, are only giving countenance to the idea that they *are* inclined to tyrannise over the men and to place them entirely at the mercy of any capricious or spiteful person, in the rank of master, who may desire to enslave his men. We would, therefore, put it to the masters as a class, whether they do not think that the already serious enough differences between the employed and the employers are likely to be greatly aggravated by such a mode of procedure, especially considering that it is the idea—however perverted or mistaken—of a *supposed* undue and enslaving power of the masters already over them, which has led to protracted struggles, and to great evils, both to master and to men.

[*** We give the above extract from the *Builder* of December 17, 1864.]



CASTELLO DELL MONTE, SOUTHERN ITALY.

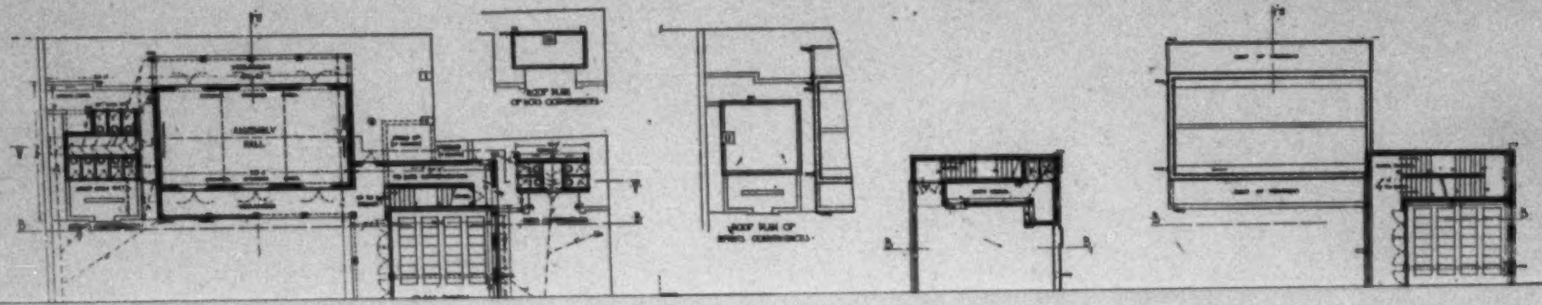
[Photo.: Angelo De Mattia, Bari.

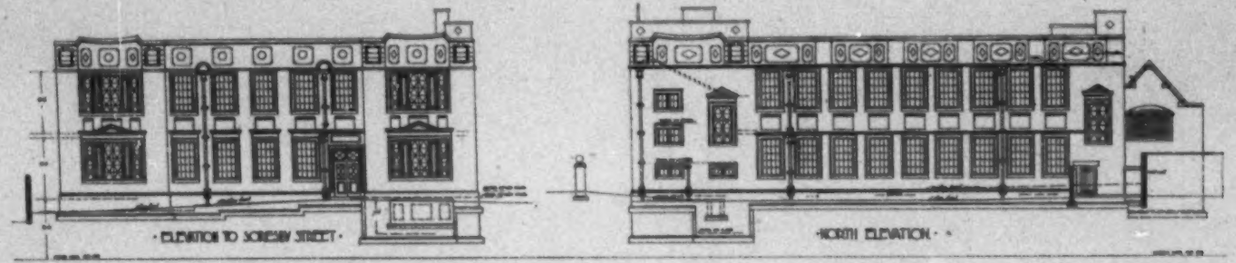


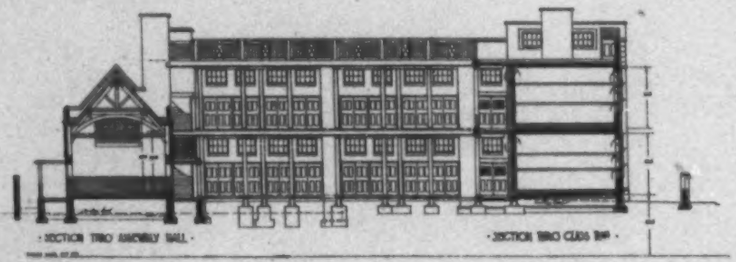
[Photo.: *Angelo De Mattia, Bari.*

THE DUOMO, BARI, SOUTHERN ITALY.

BOROUGH OF CHESTERFIELD EDUCATION AUTHORITY - SCRESBY STREET COUNCIL SCHOOL FOR 220 INFANTS AND 220 BOYS





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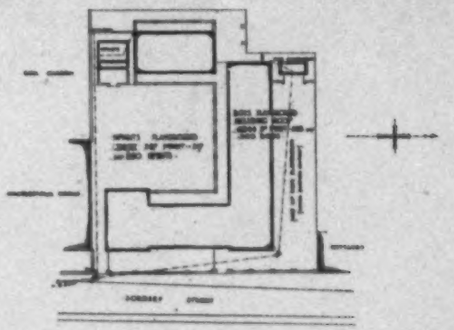


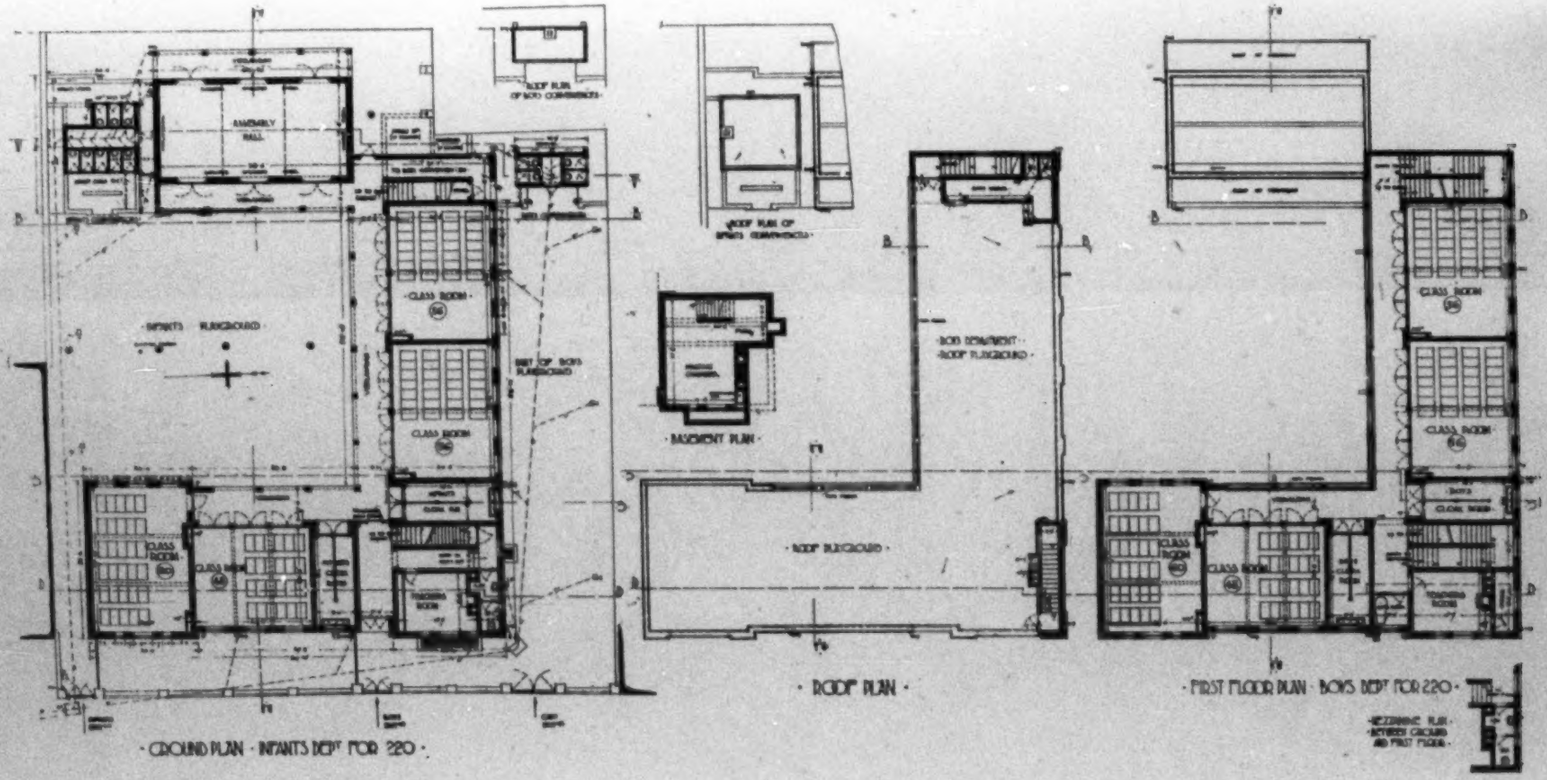
BLOCK PLAN

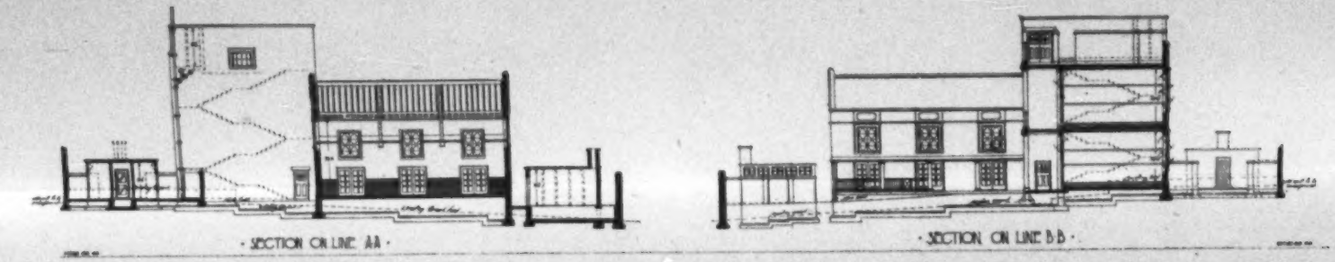
COUNCIL SCHOOL, CHESTERFIELD.—Mr. Percy B. Houfton, Architect.

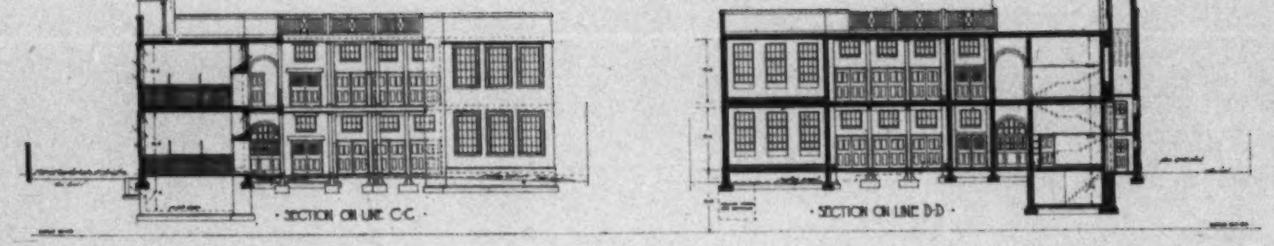
# BOROUGH OF CHESTERFIELD EDUCATION AUTHORITY · SORESBY STREET COUNCIL SCHOOL FOR 220 INFANTS AND 220 BOYS

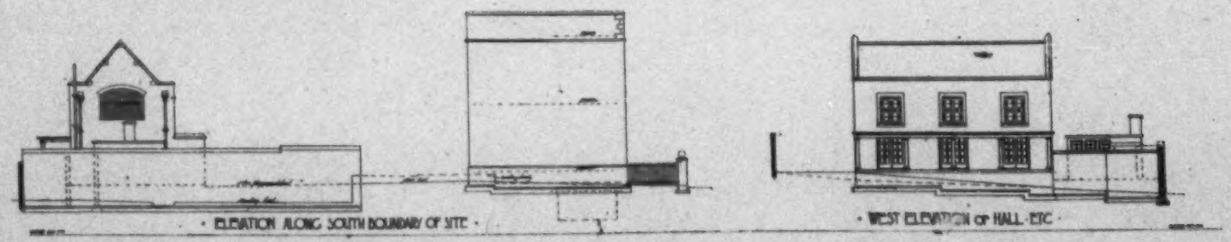
SCALE EIGHT FEET TO AN INCH

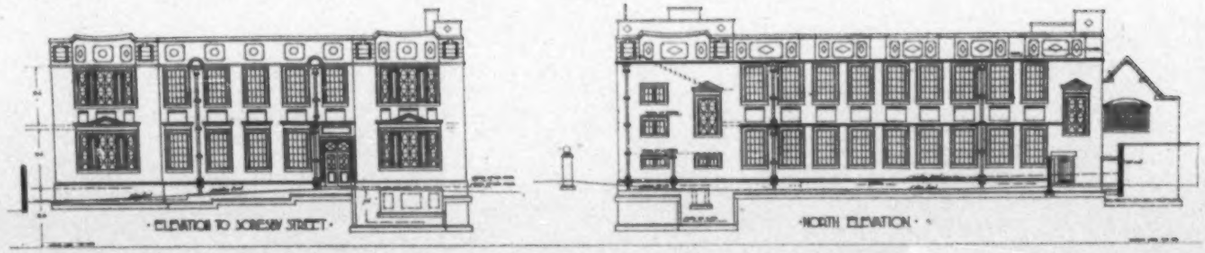
FOSTER & HOUFTON ARCHITECT CHESTERFIELD

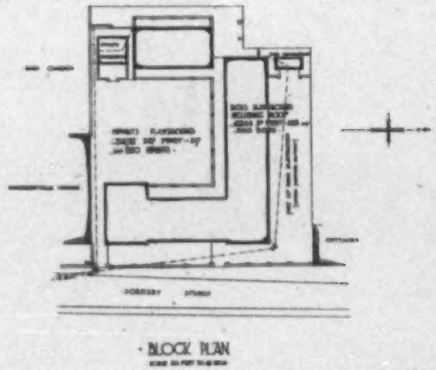


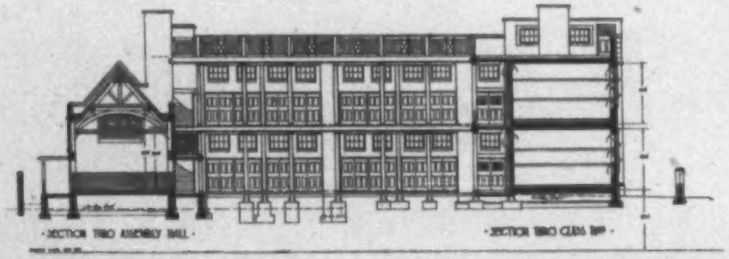





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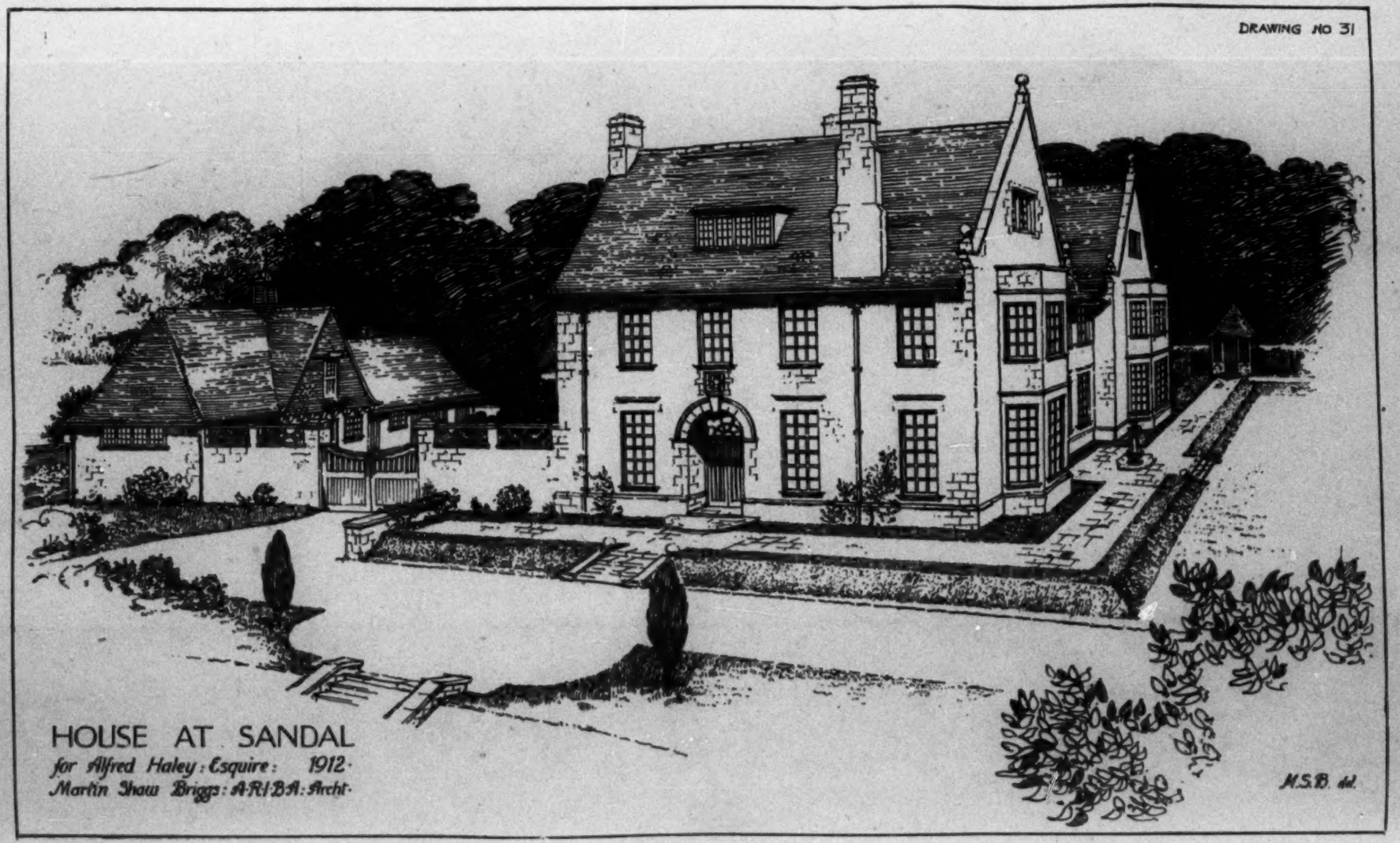
COUNCIL SCHOOL, CHESTERFIELD.—Mr. Percy B. Houfton, Architect.

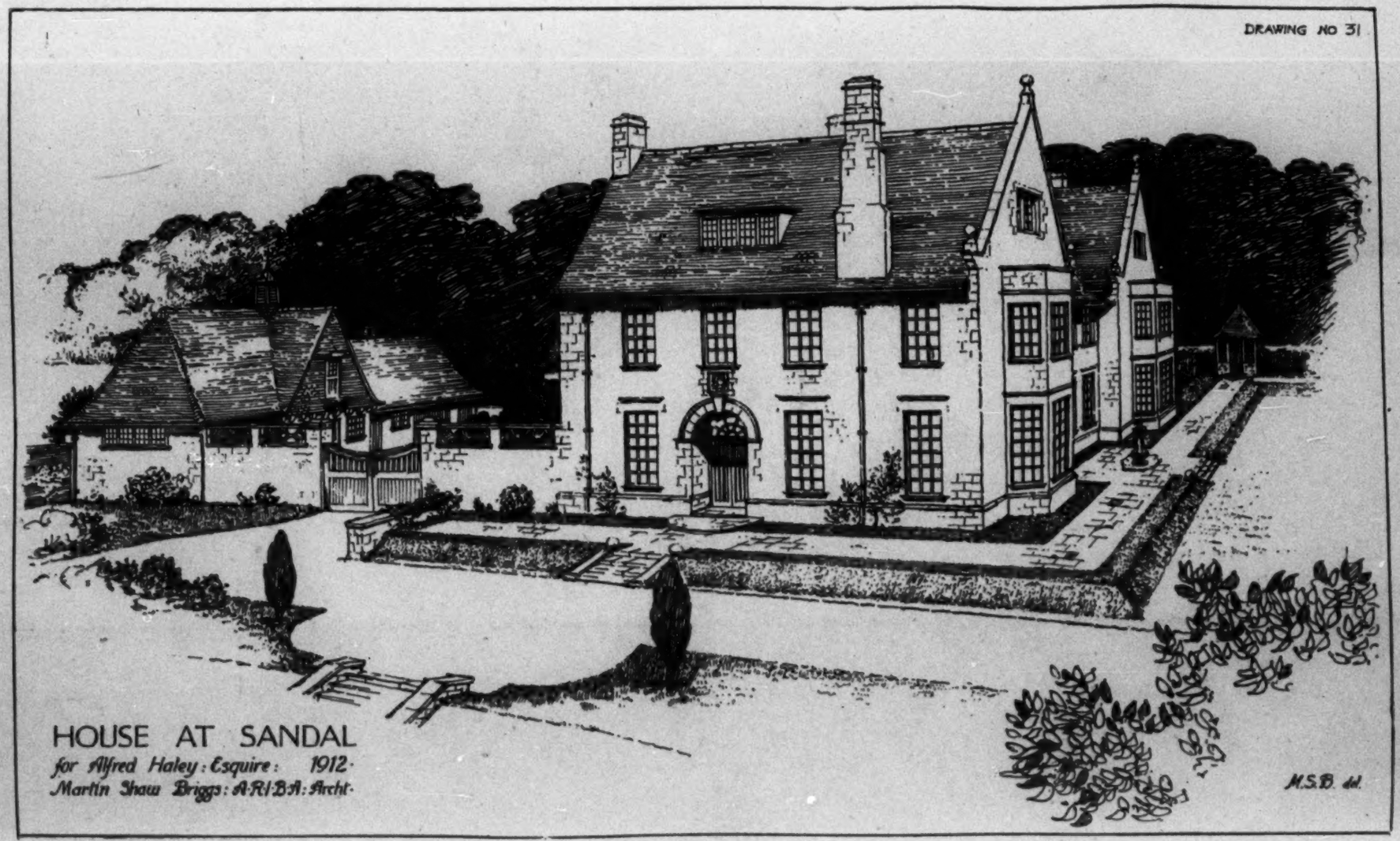



HOUSE AT SANDAL, NEAR WAKEFIELD.—Mr. M. S. Briggs, A.R.I.B.A., Architect.

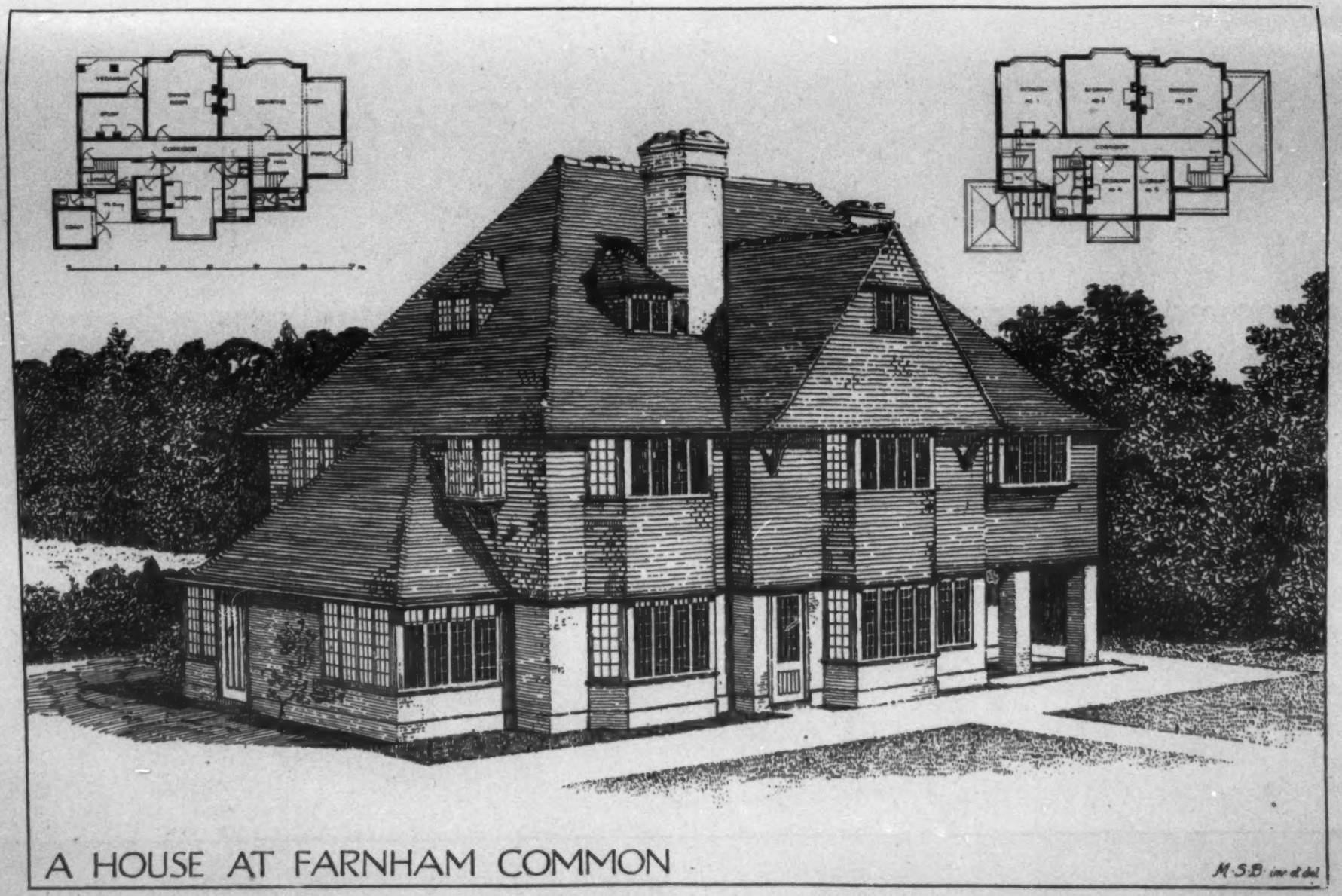
# A HOUSE AT FARNHAM COMMON

M.S.B. inv. et del.

HOUSE, FARNHAM COMMON, BUCKS.—Mr. M. S. Briggs, A.R.I.B.A., Architect.




HOUSE AT SANDAL, NEAR WAKEFIELD.—Mr. M. S. Briggs, A.R.I.B.A., Architect.




HOUSE, FARNHAM COMMON, BUCKS.—Mr. M. S. Briggs, A.R.I.B.A., Architect.

# ALL SAINTS CHVRCH HAWTON NOTTS
## DETAIL OF NORTH WALL OF CHANCEL

ONE INCH SCALE AND FVLL SIZE

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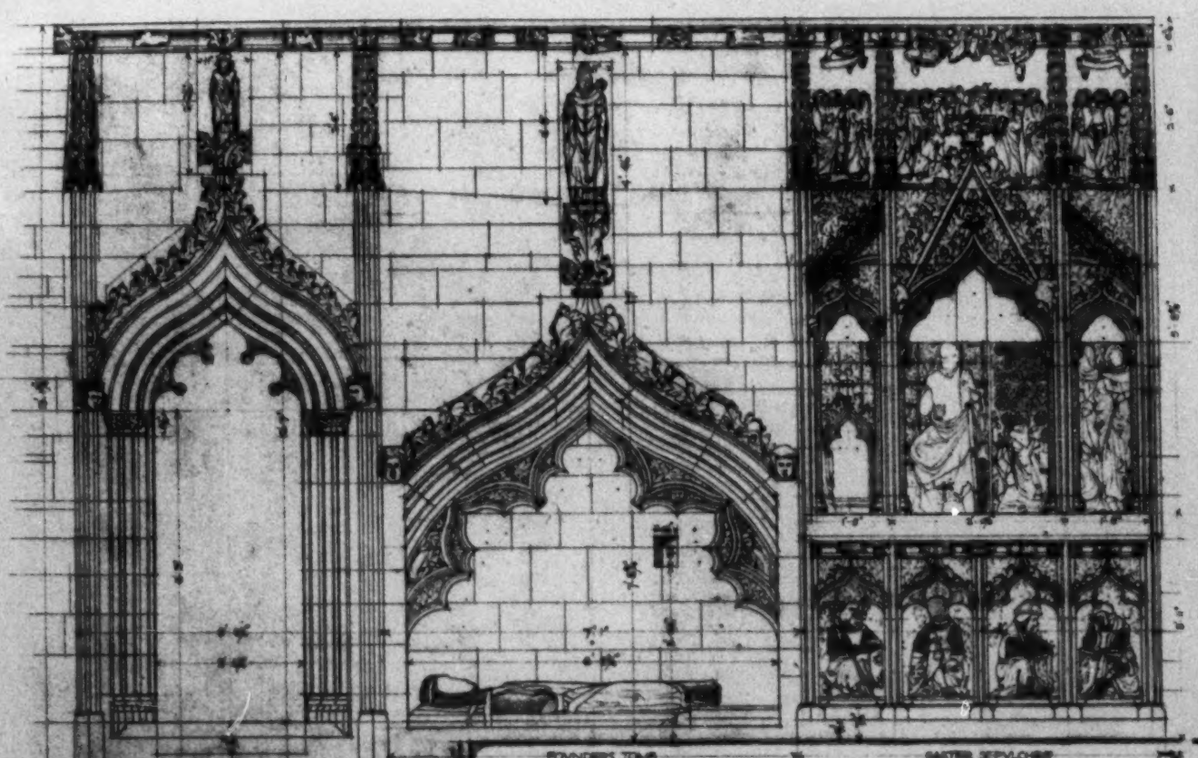
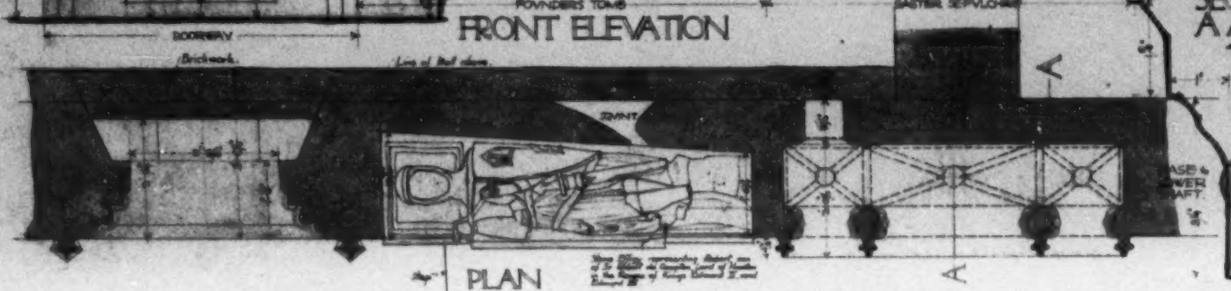
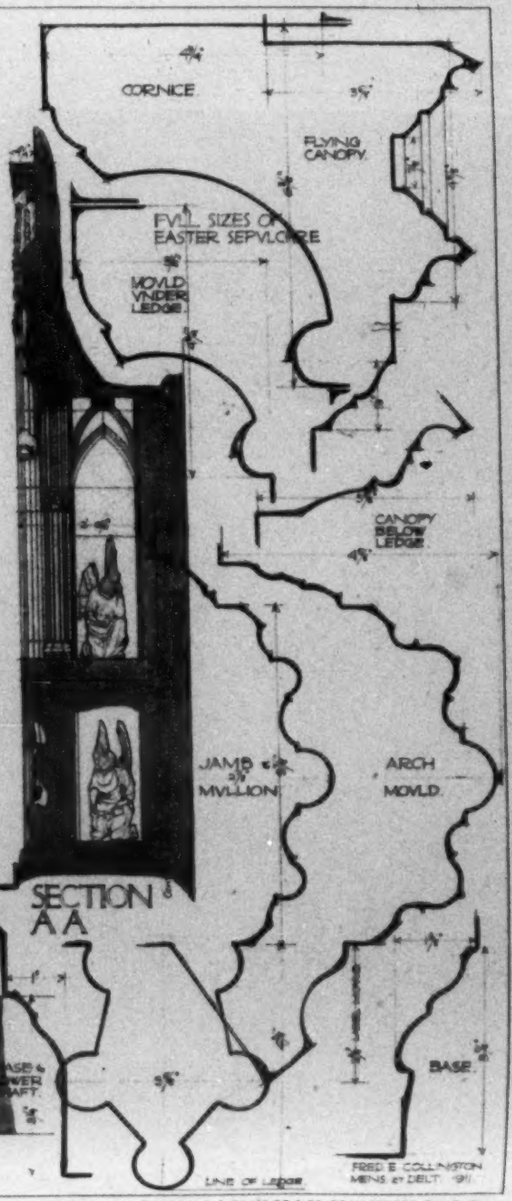


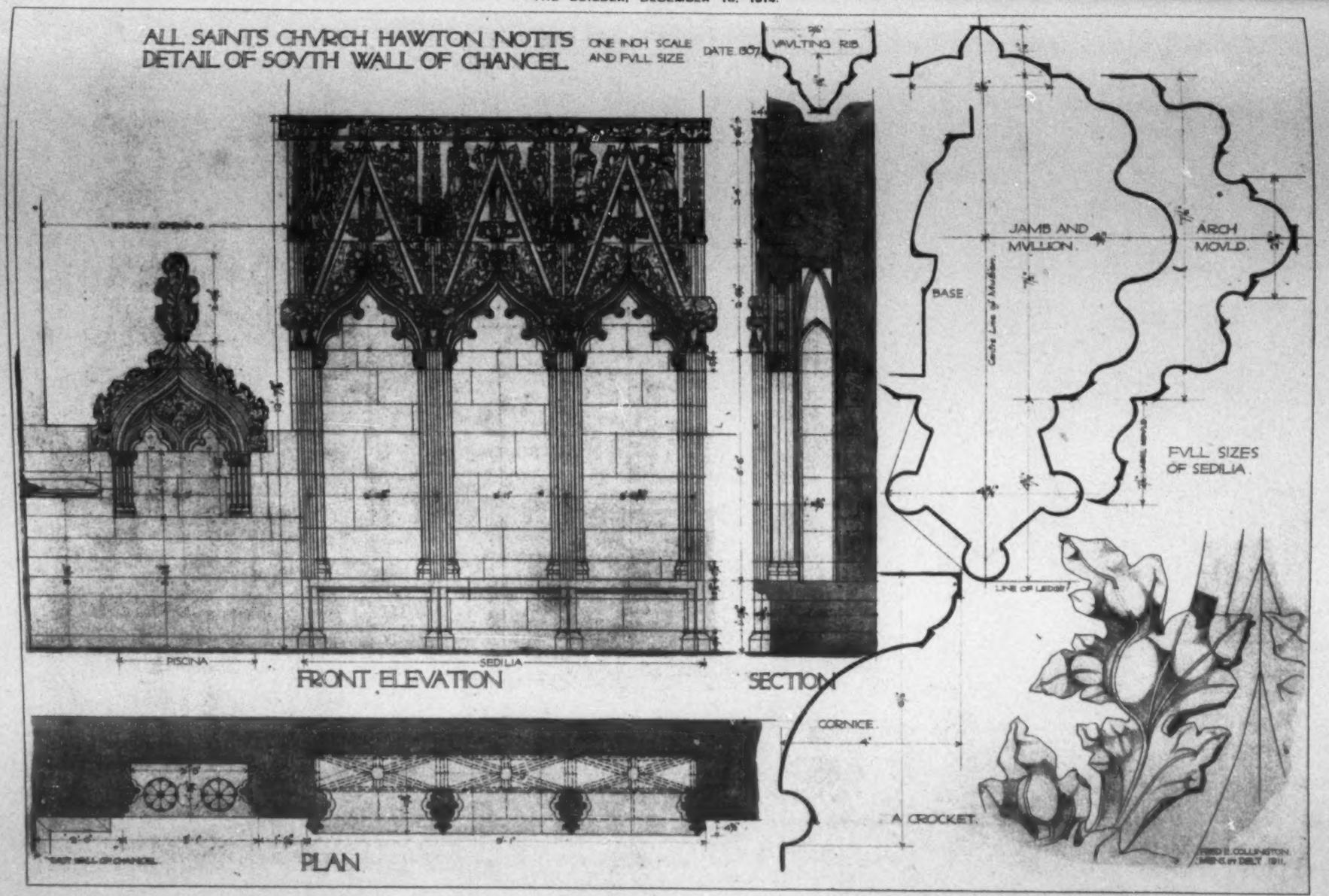




FRED E COLLINSTON MEMS. et DELT. 1911

"INK-PHOTO" SPRAGUE & CO LTD 69 & 70, DEAN STREET, SOHO, W.

ALL SAINTS' CHURCH, HAWTON. M... D... M... B...

THE BUILDER, DECEMBER 18, 1914.




"INK-PHOTO" SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

ALL SAINTS' CHURCH, HAWTON.—Measured Drawing by Mr. F. E. Collington.

# CONSTRUCTION SECTION.

## FERRO-CONCRETE GRAIN SILOS.

THE grain silos illustrated and described in this article have been constructed at Salford, Lancashire, for Messrs. Jackson & Sons, and they have a capacity of 40,000 qrs. of grain. The building is situated at the water's edge, on the Manchester Ship Canal, in a very convenient position, and it has been designed and executed purely as a large store, without any great architectural pretensions, but with every regard for strength, convenience, and lasting properties. It consists of two portions—viz., the receiving house, which is about 32 ft. by 25 ft. 6 in. on plan, and the storage portion, which is about 115 ft. long and 52 ft. 6 in. wide. The total height from the ground level to the top of the highest portion of the roof over the bins is about 106 ft. The whole of the building is constructed in ferro-concrete designed on the Hennebique system by Messrs. Mouchel & Partners, of 38, Victoria-street, Westminster, even the cornices and copings being formed in this material. Owing to the nature of the soil, it was necessary to introduce piles in the foundation work, and these are driven in groups of four in every case, excepting where occurring under the outside walls, where they are driven in pairs. These piles were all 14 in. square and formed of ferro-concrete. The wall of the receiving house, which adjoins the canal, was originally designed to be carried on the existing retaining wall, which occurred at this point, but upon investigation it was found to be unsatisfactory, and sheet piles 18 in. by 12 in. were driven along the whole front, these extending below the canal bed and 12 in. into the rock at the bottom, and inside these sheet piles 14-in. square piles were driven under each column. A concrete cap was formed at the head of the piles, and a reinforced-concrete tie was carried back to the second row of piles under the silos. The photograph illustrated in Fig. 1 shows this work during construction, and some of the sheet piles can be seen in position. In one or two cases the column loads were distributed by means of reinforced concrete slabs on to existing concrete foundations which were considered satisfactory. These foundation slabs were generally 8 ft. 6 in. long and 3 ft. 6 in. wide, and they had a minimum thickness of 9 in. at the outer edges, increased by sloping up the concrete to give a maximum of 2 ft. at the junction with the column. These slabs were reinforced with a double lattice of rods in the lower surface and a single lattice placed at about the centre of the depth of the sloping portion, and several stirrups are introduced to bind the whole of the reinforcement together, and the column rods are carried down and bent out at right angles for a distance of about 9 in. between the double lattice in the lower surface. A detail of the slabs introduced between the columns and the piles is illustrated in Fig. 2, where the type employed for two, three, and four piles is shown, there being only one instance of the second case, which occurred at the junction of the receiving-house and the bins. In the case of a column carried by four piles the slab was 3 ft. 8 in. square and 14 in. thick, with a lattice of bars in both upper and lower surfaces as reinforcement. The reinforcement in the piles projects up into the slab, and the column bars are carried down to the underside and turned out at right angles. The slabs in the other cases are similar, but have a smaller area in proportion to the load carried. A general plan and section are illustrated in Figs. 3 and 4, and it will be seen that there are fifty-eight bins in all, these being, generally speaking, 10 ft. square between the walls. These bins commence at a height of 15 ft. above the ground-floor level, and the sloping mouths leading to the hoppers come below this level. The ground floor is thus a large open floor with external walls only and internal columns under the corners of the bins at 10-ft. 5-in. centres in both directions. These columns are reinforced with twelve lines of vertical reinforcement, well tied with links around the outer edges and across the core, and they are finished at the top by a reinforced beam under the silo walls which is triangular in section, caused by the sloping mouths leading to the hoppers. These triangular beams are reinforced with five rods, which are linked together with horizontal links, and others parallel to the sloping concrete. The silo walls are rather uncommon in their treatment, as they vary in thickness throughout the length, as will be noticed on the plan. They have a minimum thickness of 5 in. for the central 5 feet, and the ends are splayed to give a thickness of 10 in. at the intersection with an adjoining wall. This was so designed with the object of reducing the concrete and thus saving space and material, but it has the objection of rendering the centering more complicated and makes more reinforcement necessary, and therefore it is doubtful if a real economy is effected thereby. The walls are reinforced with horizontal and vertical rods in both surfaces, the former bars being carried across the thickness towards the ends and continued into the adjoining bay. A detail of the construction of the hopper mouth is illustrated in Fig. 5, where the concrete is 6 in. thick, and it is connected to the triangular beams 15 in. deep above-mentioned at the upper edges and splayed downward to give an opening 8 in. square at the bottom. The reinforcement consists of bars in both directions in the lower surface, those parallel to the edges being well lapped at the diagonals and the others turned down into the concrete at the bottom inside and around a bar placed round the opening, the latter being welded to give a continuous rod. The external walls are also 5 in. thick and reinforced with rods in a similar manner to the silo division walls, and the wall next to the receiving-house has piers formed with a projection of 4½ in. to take the ends of the beams in this portion. At the top of the silos a floor is formed for access to the loading-holes, and this is constructed with reinforced slabs 4 in. thick carried on secondary and main beams. The main beams have a span of 10 ft. and are 11 in. deep and 10 in. wide, and the secondary beams have a similar span and divide the slabs into panels 10 ft. by 5 ft., and columns 8 in. square are carried up at the corner of each bin to support the roof which covers this floor. The floor is stepped up with 4-ft. steps, as shown in the section, and the roof is formed with three horizontal bays and two sloping ones to give the necessary headroom at the centre. This roof is constructed with reinforced slabs 3 in. thick and secondary beams having a span of 10 feet, placed centrally between the columns and main beams placed on the same lines as the columns. The secondary beams are 4 in. wide and 10 in. deep, including the thickness of the slabs, and reinforced with two rods on the lower surface and one on the upper, and the main beams are 5 in. wide and 11 in. deep, reinforced in a similar manner. Stirrups are provided to connect both sets of rods. The roof is covered with asphalt, and parapet walls, 3 ft. 6 in. high and 4 in. thick, are carried round the building. A reinforced cornice is formed at the roof level, and the parapets are finished with a ferro-concrete capping. The receiving-house has six floors above the ground floor, and the first floor and roof are formed of reinforced concrete, and the remainder of the floors are of wood carried on main beams of ferro-concrete. The first floor is formed with main beams at 10-ft. 5-in. centres carried by ferro-concrete piers on the outer edges and the buttresses against the silo

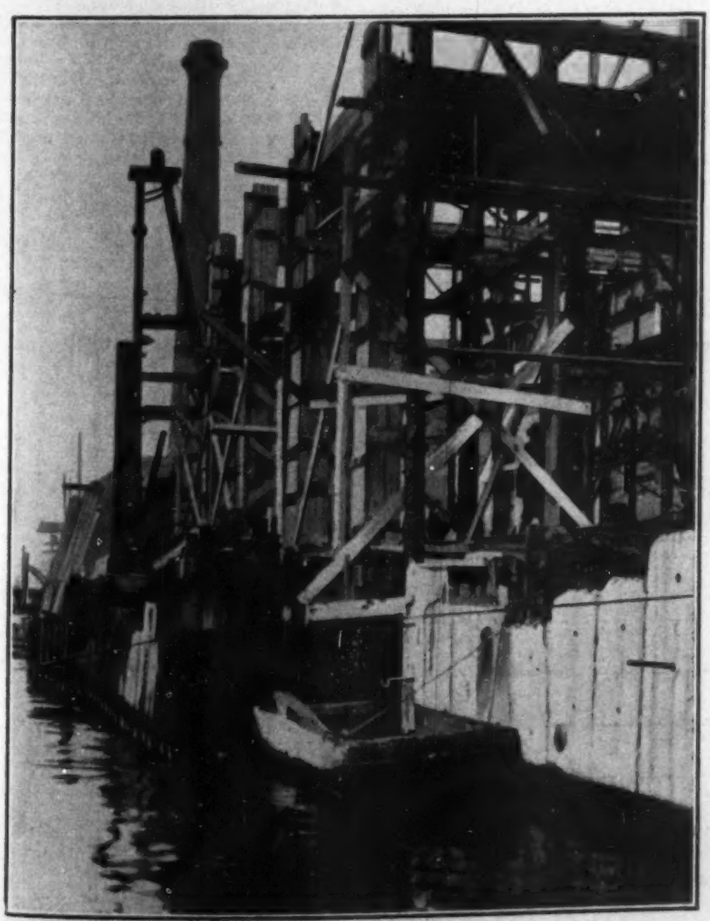


Fig. 1. View of Sheet Piles.

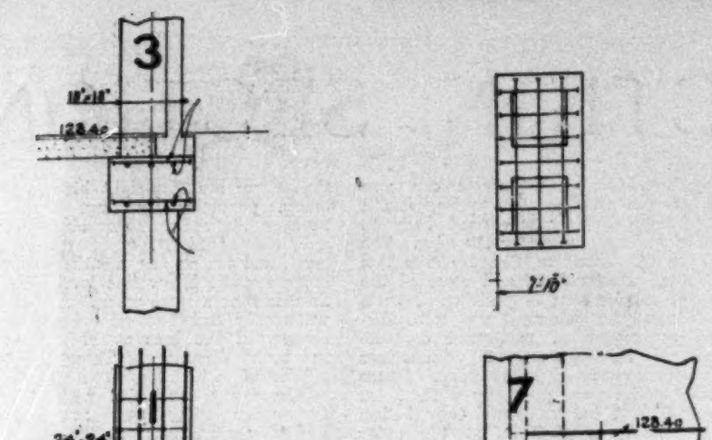



**Fig. 2. Details of Capping to Piles.**

walls which were previously mentioned. These beams have a span of about 25 ft., and they are 24 in. deep and 10 in. wide, with reinforcement consisting of six bars in both the upper and lower surfaces, with stirrups throughout the length. The bars in the compressional area are only carried along for a portion of the length, when they are turned down and discontinued, and the lower bars are cranked up towards the ends. The three bays are each divided up by four secondary beams having a span of about 10 ft. and situated at about 5-ft. centres. These beams have a depth of 9 in. below the slab, and are 4 in. wide, with two bars as reinforcement in the lower surface. The slabs are 4 in. thick and doubly reinforced, and in addition have distribution bars at right angles to the main reinforcement. In the case of the upper floors the wood flooring is 4½ in. thick, and this is carried by beams of ferro-concrete, which, of course, could not be designed as T-beams, as there was no slab, and these are 24 in. deep and 12 in. wide with eight rods in both upper and lower surfaces and stirrups throughout. The upper bars are discontinued at various points in the length, and the lower bars are cranked up towards the ends. The roof is constructed on the same lines as the first floor, and the slabs are 3 in. thick, except where forming the compressional flange of the main T-beams, where the thickness is increased to 4 in. for a width of 4 ft. The main beams are 24 in. deep and 7 in. wide, with six bars in the lower surface and two in the upper, and the secondary beams are 8 in. deep below the slab, making a total depth of 11 in., and 4 in. wide, and the reinforcement consists of two bars in the lower surface and one in the upper. The buttresses carrying the ends of the main beams are 24 in. wide on the ground floor, with six vertical bars, and they are reduced to 12 in. wide, with four bars at the sixth-floor level. Parapets of reinforced concrete are formed round this portion in a similar manner to that mentioned in connection with the portion of the building containing the silos, and a view of the finished building is illustrated in Fig. 6, this being taken from the canal side and showing the receiving-house.

The building forms a very good example of this type, and contains some interesting details of reinforced concrete construction.

The details of the construction were submitted to Mr. Alexander Drew, Consulting Engineer, of Victoria-street, Westminster, and approved by him on behalf of the owners before the work was put in hand.

The contractors for the work were the Yorkshire Hennebique Contracting Company, Viaduct Works, Leeds.

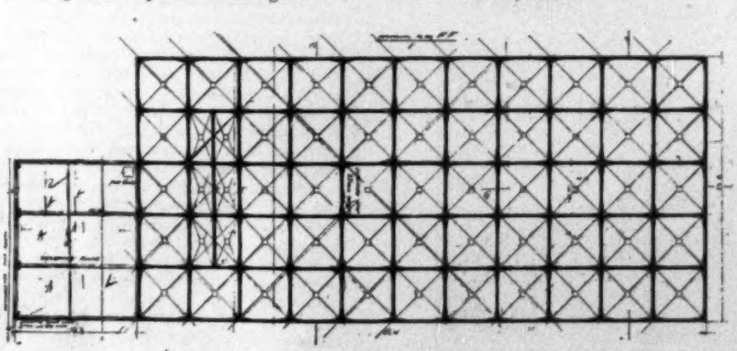


**Fig. 3. General Plan.**

## THE INSTITUTION OF CIVIL ENGINEERS.

AT a meeting of this Institution on the 1st inst. papers were read on (1) "Tests of Reinforced Concrete Structures on the Great Central Railway," by Mr. James Benjamin Ball; (2) "Corrosion of Steel Wharves at Kowloon," by Mr. Somers Howe Ellis; (3) "Concreting in Freezing Weather, and the Effect of Frost upon Concrete," by Mr. John Hammersley-Heenan. The following abstracts are given:—

### "TESTS OF REINFORCED CONCRETE STRUCTURES ON THE GREAT CENTRAL RAILWAY."

The Great Central Railway Company have completed within the last six years several considerable works in reinforced concrete, the more important of which include a bridge carrying a public road over their main lines at Ashton-under-Lyne—believed to be one of the heaviest reinforced concrete bridges of its type yet constructed in England—a bridge carrying a new road and tramway over the Grimsby District Light Railway at Immingham dock, and several reinforced concrete bridges in the dock area at Immingham, as well as a large engine-shed at Immingham dock, the foundations and pits of which are constructed in reinforced concrete throughout.

#### Reinforced Concrete Overbridge, Ashton-under-Lyne.

This bridge consists of parallel girders of three spans. The main girders also form the parapets of the bridge. On a level with the bottom booms are formed the main deck-beams or cross girders, and between these again are the smaller deck-beams parallel to the main girders, supporting the reinforced concrete decking. The entire superstructure is reinforced with round bars on the Hennebique system.

The abutments at each end are of mass concrete, but the piers are braced and reinforced. The main girders only rest on the abutments and are not anchored down in any way; moreover, they are not continuous, there being a space of 1½ in. between the girders over each of the intermediate supports for expansion; thus each span is independent, and consequently any slight settlement which may take place in the abutments or piers will not affect the stresses on the reinforcement, and in each case the full bending moment effects due to both dead and live loads were taken into account. Both tensile and compressive reinforcement was used in all

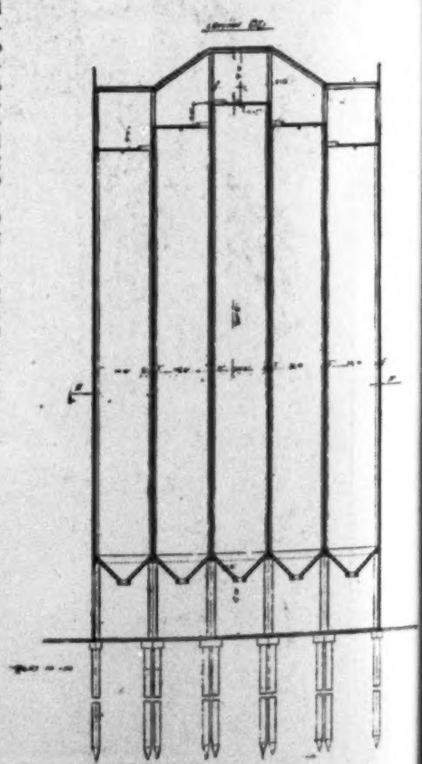


**Fig. 4. Cross-Section of Silos.**

the beams, the percentage of reinforcement in the main girders being exceptionally high, on account of the small area available in the compression flange. The bridge was tested with a dead load of 1 cwt. per square foot and a rolling load of two 16-ton traction engines, each drawing a lorry loaded with pig iron to a weight of 32 tons, or a total moving load of 96 tons. In all cases the recovery was complete after the load was removed. The working stresses were limited to 700 lb. per square inch maximum compressive stress on the concrete, and 16,000 lb. per square inch tensile stress on the reinforcement. The actual cost of the work as carried out in reinforced concrete amounted to £5,917. The estimated cost of a similar structure in steel and masonry was £8,390.

**Reinforced Concrete Bridge Carrying New Road and Tramway over the Grimsby District Light Railway.**

This bridge, also designed on the Hennebique system, consists of a roadway 40 ft. wide extending over two spans of 37 ft. 2 in. and 31 ft. 2 in. respectively. There are five main longitudinal beams, the two outer of which also carry a reinforced parapet. The parapets, however, are not designed to take any portion of the load stresses.

Between these main beams cross beams are arranged, which support reinforced decking.

The percentage of reinforcement ranges from 0·60 per cent. in the cross beams to 4·67 per cent. in the outer main beams of the longer span. The bridge was tested with two moving tramcars, and no appreciable deflection was recorded on any of the beams. It was designed to allow for the passage of two 40-ton boiler-trollies drawn by a 15-ton traction-engine, that portion of the bridge not covered by the moving loads being loaded with 1 cwt. per square foot.

In computing the stresses the various members were taken as being freely supported, and no allowance was made for the continuity of the beams or for the fixity of the ends, the allowable working stresses being the same as in the case of the previous bridge. The actual cost of this bridge carried out in reinforced concrete was £2,939. The estimated cost of a similar structure in steelwork and masonry was £3,500.

**Four High-Level Railway Bridges, Immingham Dock.**

These are all skew spans of the same construction, each bridge carrying four tracks over a siding for empty wagons, and forming practically a tunnel 86 ft. long. The square span between the abutments is 15 ft. Both the wing walls and abutments are reinforced, and there are in addition reinforced tie-beams at the bottom of the abutments, at the same spacing as the cross girders, embedded in a concrete raft.

The bridges were designed to carry axle-loads of 18 tons, spaced 6 ft. 6 in. apart, or 72 tons on the single-line span. The average cost of these bridges in reinforced concrete was £3,024 each. The estimated cost of a similar structure in steelwork and masonry was £3,800 each.

**Fig. 6. Ferro-Concrete Grain Silos: View of Completed Building.** (*See page 577.*)

**Reinforced Concrete Foundations and Pits for Engine-Shed at Immingham Dock.**

This work consists of a reinforced concrete raft, so spread that the load on the ground nowhere exceeds 10 cwt. per square foot, and the engine-pits form part of the raft. The floor of the shed is carried on the pit walls; it consists of a reinforced concrete deck between each of the pits, and is not in any way dependent on the earth filling underneath. There are in addition fourteen independent reinforced concrete engine-pits outside the shed, of a similar design to those in the shed, but without any flooring between. Reinforced tie-beams are provided every 60 ft. apart between the pits. Kahn bars were used throughout in the reinforcement of this work.

The actual cost of the work as carried out in reinforced concrete (engine-pits and foundations only) was £8,850. The amount of an actual tender received for brick pits on a reinforced concrete slab was £12,920. An estimate for brick pits on concrete carried on timber piling was £15,150.

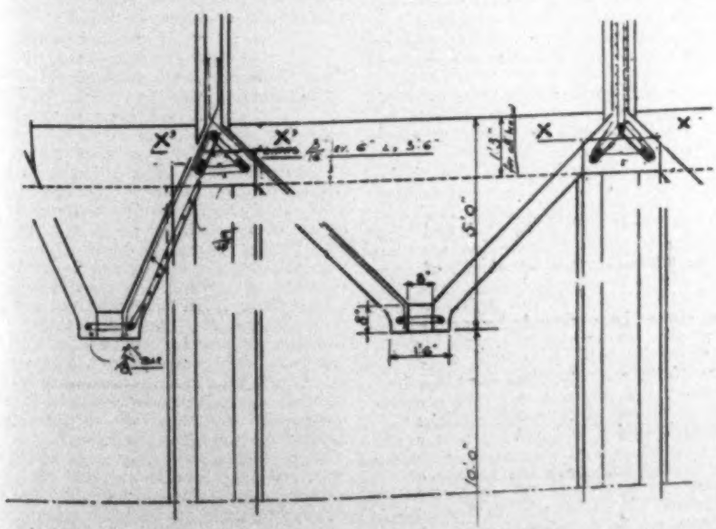


**Fig. 5. Detail of Hoppers.** (*See page 577.*)

**"CORROSION OF STEEL WHARVES AT KOWLOON."**

The wharves to which this paper refers were constructed in 1907-9, and are situated on the mainland side of Hong-Kong Harbour, at the south-eastern corner of the Kowloon promontory. They belong to Messrs. Alfred Holt & Co., of Liverpool, the ships of whose "Blue Funnel" line of steamers, of a capacity of 6,000 to 10,000 tons, use No. 1 wharf for discharge and loading. Wharves No. 2 and 3 serve for lighters, native craft, and an occasional small coasting steamer.

In 1906, in connection with the reconstruction of a wharf, an examination was made of some steel joist piles which had been in place for about four years, and they were found to be corroded in a curious and rather alarming manner.

Any steel immersed in sea water at Hong-Kong becomes quickly coated with barnacles and other shellfish, and with a dense vegetable growth, particularly from near the surface of the water to 15 ft. or so below it. It had been an accepted theory that this growth protected the metal and prevented rusting. On scraping away the growth from a pile of the wharf examined, however, it was found that a large number of pits had formed in the surface of the steel, varying in size up to 1¼ in. in diameter and ⅜ in. deep. They were full of a black carbonaceous powder, which was also found in a thin layer on the surface of the unpitted steel (though no rust or scale could be observed there), and which, on exposure to the air, turned to a dark red colour. This powder was found to be sulphide of iron (FeS), and its change of colour to be due to oxidation. Apparently, some particular shellfish or other marine growth attached to the piles produces large quantities of sulphuretted hydrogen when dead and decaying; this sulphuretted hydrogen attacks the metal, with an accentuated action in certain spots, producing the pits described; and it is evident that when once the process is started the deposit of sulphide favours more rapid erosion beneath it.

The author examined at that time some steel piles of an H-iron pattern, which had been in place only three or four years, and estimated that 10 per cent. of the metal was

eaten away in some sections, chiefly in the form of pitting. The destructive effects of the marine growth appear to be confined to the part between low-water level and 15 ft. below it, the zone of worst corrosion extending from 5 ft. to 10 ft. below low-water level. As a result of his inspection, the author recommended that the piles and lower bracing of the main (No. 1) wharf should be encased in cement concrete; and it was eventually decided to encase the whole of this structure, leaving the other wharves—Nos. 2, 3, and that fronting the Praya Wharf—with bare steel, which was painted with anti-corrosive composition on erection.

The work of constructing these latter wharves was completed in 1908. Since then the superstructure and the piles above low-water level have been scraped and painted annually, and the steel has been kept in fair condition with no marked deterioration, except in one year, when a longer period than twelve months was allowed to elapse between the recoatings. The yearly cost of maintenance is about £100 for a total deck area of 34,000 sq. ft. Two years after completion pitting had commenced on the underwater surface of the piles, the construction coating of paint having then almost disappeared, and a thick layer of shells and marine growth having become attached to the metal. In April, 1913, a European diver found that this corrosion had developed throughout to a serious extent.

The method adopted in encasing the piles of No. 1 wharf was the following:—The piles—12-in. by 12-in. 80-lb. joists in single unspliced lengths up to 78 ft.—were first driven with an ordinary pile-driver. Welded-steel cylinders, 20 in. in diameter inside, with metal ¼ in. thick, were then dropped over the piles and tapped down into the mud with an 8-cwt. wooden hammer. The face row of piles, being driven in close pairs, were enclosed in cylinders 3 ft. in diameter, built up of ¼-in. steel plates with riveted joints. A depth of 4 ft. to 15 ft. of the bottom of each cylinder (according to its depth) was then filled with 1 : 2 : 4 Portland cement concrete, lowered down through the water in metal hopper-boxes, and when this had set the cylinders were pumped dry at low water and filled with concrete thrown in and rammed in place. The wharf superstructure was coated with concrete by encasing each member in temporary wooden moulds. A minimum cover of 2½ in. was provided to the steel throughout, the concrete being of Portland cement of standard quality, sand, and granite broken to pass a ¾-in. ring, in the proportion of 1 : 2 : 4 by measure, mixed by hand.

In July, 1910, when the whole of the work had been completed about a year, and the bulk of it for two years, the author made an inspection of the wharf, and was unable to detect any sign of deterioration on the surface, but he did not cut into the concrete. Three years later obvious indications of corrosion within were apparent on the surface of the concrete. Most of the diagonal members had developed longitudinal cracks in their upper lengths, above high-water mark, and the under surface of the casing to the deck-beams showed similar defects in a few places—all the cracks having formed in line with the outer edges of the channels of which the various members are built up. Rust stains were also visible on the surface of the concrete in many places above high-water level.

Thorough examination of the whole structure revealed that above high-water level corrosion appeared to have gone on almost unchecked by the presence of the concrete covering, and a thickness of about 1-16 in. of rust-scale was found on all the steel members in this zone on their under and outer sides. The upper sides of the top horizontals could not be examined without removing the timber deck, which at the time it was not convenient to do. The vertical posts were in slightly better condition, apparently owing to the concrete which encased them being of a denser quality, as their position allowed of more thorough ramming into place.

Although the workmanship was not everywhere good, the author was forced to the conclusion that even when perfectly encased in a 2½-in. covering of sound, homogeneous concrete, the steel was not protected against the effect of excessively damp, salt air in that climate.

The limit of serious rusting may be taken as high water of neap-tides; below that level the corrosion diminished rapidly down to mean-tide level, and there it practically disappeared. The lower bracing members of the wharf in question were all found to be entirely unaffected by corrosion.

The author concludes that while steel protected by concrete has little or no tendency to corrode if it becomes thoroughly wet twice in the twenty-four hours, yet when it is exposed to air rendered constantly damp by the evaporation of sea water, especially in a tropical climate, some other external coating must be sought for, either as an addition to the concrete or in place of it. The corrosive effects of salt, damp air appear, however, even in such a climate as that of Hong-Kong, to be limited to a zone immediately above the surface of the water. Steelwork, both exposed and embedded in concrete, in warehouses on the same property is not thus affected. Neither, in the author's experience, does the evaporation from fresh water affect steel embedded in good concrete.

### "CONCRETING IN FREEZING WEATHER, AND THE EFFECT OF FROST UPON CONCRETE."

The engineer who is called upon to carry out work in Canada during the winter finds that the methods of construction which were satisfactory in the summer will need considerable modification to suit winter conditions.

Concrete work, especially the lighter forms of reinforced concrete, used in building construction needs greater care and supervision. As a result of considerable experience gained during the last few years it can be said that the freezing of concrete will not damage it if it has first had a chance to set under favourable conditions for about two days. The effect of the freezing is simply to delay the process of hardening, which will again proceed under suitable conditions, and will eventually attain its full strength. If concrete is frozen before it has commenced to set, it will not be injured if precautions are taken to prevent it from freezing again after it thaws until it is sufficiently hardened to withstand the effects of subsequent freezings. It is alternate freezing and thawing during the process of setting that causes the damage.

To meet the foregoing conditions, when carrying out concrete work in winter, it is necessary to devise means of mixing the concrete with materials freed of frost, placing it in the forms before it has commenced to freeze, and then protecting it and keeping it warm for about two days. After that it may be allowed to freeze without fear of its being damaged.

For light sections of concrete, such as in reinforced concrete, poured at a temperature not below 22° Fahr., some engineers allow salt to be used in a proportion not exceeding 10 per cent. There are many arguments for and against its use. The author prefers not to use it, except in marine works when the concrete is mixed with sea water and the salt is admitted in that form. He has found that, instead of using salt, good results will be obtained for temperatures that do not fall below 22° Fahr. by heating the water with a steam hose taken from the mixer boiler, and when necessary placing a few coke or wood fires on the heaps of sand and crushed stone, the usual precautions being taken to protect the concrete when in the forms, as described later.

For lower temperatures than those referred to above greater precautions must be taken to heat the ingredients by means of steam coils or radiators.

The concrete having been mixed, and the portion of the work to be carried out decided upon, the floor immediately below it should be partitioned off with tarpaulins, and coke stoves arranged under the floor slab, allowing about one stove to every 800 sq. ft. of floor space. All loose dirt and snow must be removed from the forms with brooms, and a steam hose should be applied to remove all ice and frost, the steam playing continuously over the forms in advance of the concrete, thus warming them in readiness for the concrete. The concrete should be poured quickly and continuously, and as each section is completed a tarpaulin may be drawn over it, supported on wooden strips about 6 in. above the surface of the concrete. In most cases this protection will be sufficient, but during very cold weather it will sometimes be found necessary to form a sort of tent over the floor, in which extra stoves are placed to protect the workmen and the upper surfaces of the concrete. Great care must be taken to have the fires kept burning continuously for two days, after which the concrete may be allowed to freeze without fear.

The work must be examined from time to time until it is found to be hardened sufficiently. During summer working the author has allowed the supports from the underside of slabs to be removed in four days, but on other occasions four weeks have not been found to be too long.

Judging from the information available at present, concrete exposed in air in a dry locality need not be affected by frost any more than good building stone, and probably it will stand much better. Concrete always submerged under water is protected, and need cause no anxiety. But concrete alternately wetted and frozen must be protected from frost. On work which is being carried out at Halifax Mr. John Kennedy, M.Inst.C.E., is protecting the concrete piles between high and low water with a covering of wood about 2 in. in thickness, which it is hoped will prevent the action of frost.

## CONSTRUCTION NOTES.

**Consistency of Concrete.** For the foundation and walls of buildings enough water should be used in the concrete so that it will flow to all parts of the mould with a small amount of puddling and spading. For columns, beams, floor-slabs, and roof-slabs the mass should have a quaky consistency such as will tend to flatten out of its own weight when piled. The mortar surface of floors should be mixed with sufficient water to make it work easily, but an excess of water should be avoided. Concrete blocks, sills, and lintels should be mixed just as wet as possible with the block machine employed. Blocks and sills made of a mixture wet enough to be quaky when placed in the mould will be dense and water-tight. Blocks made with dry materials are porous, lack strength, and present a dead appearance. It must always be remembered that the bonding quality of cement in concrete depends upon a hydraulic action between the cement and the water, in which each plays an equally important part. The lack of sufficient water to complete this action is therefore as detrimental as the lack of cement.—Asbestos and Portland cement for many years have proved good partners in fireproof construction and property protection. A new building material is just being turned out in Switzerland, where large slabs or boards are made under pressure, with Portland cement and asbestos fibre forming the principal ingredients. The slabs, 1 in. thick and about 4 ft. by 15 ft. in area, may be cut as desired at the factory, and are adapted for outside walls, inside finish, certain furniture, and many other uses. Cement and asbestos have for many years been used with admirable results in making shingles and for other similar purposes, and the short fibre asbestos, which is to a certain extent a by-product of the production of the high-grade, long fibre asbestos—capable of being spun—finds its way when mixed with Portland cement into many uses in the line of building construction.—*Contract Record*, New York.

**The Concrete Institute.** A PAPER on "Shear and Problems Arising Therefrom" was read by Mr. H. Kempton Dyson, Secretary of the Concrete Institute, at the fifty-second ordinary general meeting of the Institute on December 3. In the course of his paper Mr. Dyson said: "It should be borne in mind that the theoretical analysis of the stresses in materials is in the nature of a speculation; it is an attempt, like all scientific theory, to explain the facts, but with the progress of investigation further facts come to light which cause us to modify the former theory. In that way there is a gradual improvement and greater exactitude about theories. But their chief purpose must always remain to draw the attention of the practical engineer to what is happening, likely to happen, or what may possibly happen, and in practical design the complications of refinements in theory are too great to permit of adoption. The practical engineer, by study of the theory, will, however, be able to make his own simplifying assumptions for approximate calculations, which will enable an economical and safe structure to be erected satisfactory in all the directions indicated by elaborate analysis."

# THE BUILDING TRADE.

## BUILDERS' ENDORSEMENTS ON TENDERS.

AT the outbreak of war attempts were made in the building trade to provide war clauses for insertion in tenders and contracts in order to protect builders from loss when, and if, changes occur in prices on which tenders have been based between the date of issue of tender and its acceptance. The Institute of Builders proposed a draft clause to the Institute of Architects and the Society of Architects, and we understand that the negotiations have now concluded. The Council of the R.I.B.A. have decided that they cannot usefully take any official action in the matter, believing that it would be best that each question should be dealt with on its merits as it arises and by the parties concerned.

The Council of the Society of Architects were unable to accept the clause as worded, and suggested that it should be modified so as to provide that the tender was based upon the normal rates of wages and materials prevailing at the date of sending in the tender. Any advance in cost which shall be proved to the satisfaction of the architect to be unavoidably and exclusively due to war conditions to be adjusted at the completion of the work. Likewise, any deduction in cost of materials after the date of the tender to be also adjusted at the completion of the work. Notice shall be given by the contractor to the architect of any fluctuation in prices affecting the contract immediately it occurs.

Any delay in the delivery of materials or goods, due exclusively to the same cause, shall be the subject of a reasonable extension of time.

But these conditions shall not relieve the contractor of his obligation to protect himself and guard against increased prices by placing his orders for materials in the early stages of the contract.

The architect's decision on all matters arising out of these conditions (or endorsement) to be final and binding on all parties concerned, and without appeal.

The Council undertook to print its suggestion in the Society's *Journal* if it was accepted by the Institute of Builders. The latter body has since intimated that the extent to which the Society has met the views of the building trade has been noted and conveyed to the members of the Institute of Builders, the National Federation of Building Trades Employers, and the London Master Builders' Association.

## THE LONDON MASTER BUILDERS' ASSOCIATION.

THE forty-third annual general meeting of the London Master Builders' Association was held on Wednesday at Koh-i-Noor House, Kingsway, W.C., when the Executive Council submitted its annual Report, from which we take the following:—

During the period from the end of January, 1914, until the middle of August building operations were greatly disorganised in consequence of the trade dispute. Since the outbreak of war business has necessarily suffered to a considerable extent with respect both to work delayed by the dispute and by preventing new contracts from being entered into.

The negotiations with the operatives' societies, which were unsuccessful and culminated in the stoppage of work on January 24 last, referred to in the previous Report, eventually led to your Association seeking the support of the National Federation, as the matter was one of national interest. Frequent meetings of all parties were held, and ultimately, at the half-yearly meeting of the National Federation, held at Cardiff in July, a resolution was carried declaring the intention to lock-out members of such societies as had not come to terms on or before August 15 following. On August 6, at a conference with the Administrative Committee of the National Federation, held at the request of various general executives of unions, the terms last submitted by your Association were accepted, with the understanding that four points should later be submitted to the Augmented National Conciliation Board for final decision. It is probable that the sudden outbreak of war had some influence upon the question of settlement, but it had already been made quite clear to the various operatives' societies affected that employers in all parts of the kingdom were determined to maintain the inviolability of agreements. The Augmented National Conciliation Board met on October 13 to consider the four points referred to it for its decision, and passed the following resolutions:—

1. As to disability—That both parties join the National Conciliation Board and come under the procedure of the Board, and until that takes place, or the present agreement is terminated by due notice, the rules suggested by the L.M.B.A. remain in operation.

2. As to foremen—That Rule 1 of the general rules agreed between the National Federation of Building Trades Employers of Great Britain and Ireland, the National Association of Master Plasterers, and the National Association of Operative Plasterers, modified to suit the respective trades, be substituted for the rule as to foremen in the existing working rule agreements.

3. As to timbermen—That the rate for timbermen remain at 8½d.

4. As to overtime rate for labourers—That the rule as signed remain in force.

The valuable assistance of the National Federation above referred to was recognised by your Council on October 15 in the following unanimous resolution:—

"That the L.M.B.A. tender their hearty thanks to the Executive Council and officers of the National Federation for their co-operation and assistance freely rendered during the continuance of the London trade dispute, January-August, 1914, whereby that dispute has now been brought to a conclusion. The L.M.B.A. desire that this appreciation shall be conveyed to the various federations, branches, and officials."

Your Council also acknowledges the support accorded by the London Master Plasterers' Association, and notes with satisfaction the affiliation of that body to the L.M.B.A.

Frequent conferences with the Operative Painters' Society have been held, but no agreement has been arrived at, although a rate of 9½d. per hour for decorators and 9d. for painters was offered.

In view of the manifest importance of ensuring continuity in the conduct of affairs during the dispute, the usual procedure under Rule IV. as to election of officers and the requisite members of the Executive Council was postponed, and ultimately, on June 22, at a special general meeting, alterations were duly made to the rules in order to deal more particularly with the question of the officers. At this meeting the four officers were invited to retain their positions, to which they consented, and the new Executive Council was duly elected, the members of which will retain their seats until December 31, in accordance with the revised rule. In future a half-yearly general meeting will be held in June each year for the purpose of the presentation of the audited accounts for the preceding year ending December 31, and of the half-yearly Report of the Council.

The importance of reorganisation, more especially with a view to increasing the power of defending legitimate interests, has engaged and is engaging the attention of a Special Committee, which will in early course make a recommendation to the Council for consideration. It is hoped that some plan will be adopted that will have the effect of still further increasing the membership of the Association.

Important conferences have taken place with various Government and municipal bodies upon matters of great import, such as the effect of war on contracts, etc. Interviews were granted by the Treasury, Local Government Board, L.C.C., and other bodies, when the views of your Council were laid before them.

A conference was also held with the representatives of the trade societies with whom working rule agreements exist upon the question of working shorter hours during the period of the war, but no conclusion was reached.

The important question of a standard rate for day-work charges has received the careful attention of the Practice Committee, and it is hoped that shortly the schedule which has been approved by your Council will be adopted by the various bodies who are interested in the direction named.

The Association has sustained loss by death during the year of the following respected members, viz., Messrs. Charles Wall, Thomas Holloway, and Joseph Hill, the first-named having filled the position of President in the year 1900.

During the period—*i.e.*, from February, 1914, to December 31, 1914—thirty-five meetings of the Council have been held, which, with the meetings of the Committees, Conciliation Boards, and conferences, make a total of ninety-three.

At its meeting held on November 19 the Council resolved to abandon the annual dinner, owing to the war.

Your Council has unanimously decided to vote a sum of money for the purpose of providing some winter comforts to those who are fighting for us at the front, amongst whom are many employees of our members.

Arrangements have been made for socks, mittens, and mufflers to be sent out at once, which will be packed separately in envelopes, which will also contain a card of good wishes from this Association, to the number of approximately 7,000 for the Army and 1,000 for the Navy, and these will be sent to London regiments, or regiments closely connected with London.

The amount to be expended upon these gifts is approximately £500, and your Council feels confident that its action will commend itself to the members generally.

During the meeting a presentation was made to the retiring President, Mr. Walter Lawrence, jun., particulars of which will appear in our next issue.

## STATE GUARANTEES FOR BRITISH UNDERTAKINGS.

UNDER the above title the *Times*, in a recent issue, referred to the Government's scheme for the establishment of an undertaking for the production of synthetic dyes and colours under British control.

One of the conditions laid down by the Government in connection with the scheme is that the large consumer should have no advantage in price over the small consumer.

It is a commonplace in business circles that the reverse should be the case; that there is usually a reduction on taking a quantity; that buyers of large quantities must of necessity be able to buy to greater advantage than buyers of small quantities.

It may be worth while, therefore, to examine the matter a little further and see how the condition laid down by the Government is going to work.

The factors which affect the price of portions of any common stock, bought at an average price and sold to yield an average profit thereon after defraying all expenses between the place where it is stored and the place where it is to be delivered, are:—Cost of dividing into lots or parcels, of delivering to transport agency, of transport (including terminal charges), and of delivery *in situ*.

These costs have to be met whether the parcels be large or small, and it needs very little consideration to see that it must be cheaper to deal with large parcels than with small ones within certain limits. For example, a parcel which fully utilises the capacity of a 10-ton lorry or railway wagon can be handled at a less cost than one which only partially utilises those capacities, since the cost per ton mile remains approximately the same for the same class of vehicle, and has to be borne by the load it carries.

It is obvious, therefore, that the large consumer enjoys an advantage over the small user in this respect which is inherent in the conditions under which materials are moved about, and cannot be helped whatever the Government may say.

Suppose, however, we eliminate all cost of delivery so far as the seller is concerned, letting each buyer pay carriage, the purchases being made at warehouse, will that make matters any better for the small consumer? Hardly; it only shifts the problem a step further back.

Most manufactures involve the use of machinery, and every time a machine is transferred from one job to the next there is usually involved some loss of working time, so that the larger the parcels run through machinery the less it costs for power.

Similarly, in regard to freight charges by sea, cargo in small parcels cost more to handle and stow than cargo in bulk, and similarly when it comes to warehousing.

So it still remains the fact that the large consumer enjoys a natural advantage which cannot accrue to the small consumer.

Even if the materials are traced back to the ground from whence they were extracted, the same factors would continue to assert their influence.

Suppose, now, that the Government only mean that for similar sizes of purchase the large consumer should have no advantage in price over the small consumer. The fact would still remain that a large consumer buying 1,000 parcels of a given size must enjoy an advantage in freight, etc., charges over the small consumer buying ten; while the large consumer could not be deprived of his power to buy, and advantage in buying large parcels also, in which respect the small consumer could not imitate him, so that the Government condition seems illusory in this case also.

Then in the matter of buying, money now is worth more than money at some future

## RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur:—

| — | Masons. | Bricklayers. | Carpenters, Joiners. | Plasterers. | Slaters. | Plumbers. | Painters. | Masons' Labourers. | Bricklayers' Labourers. | Plasterers' Labourers. |
|---|---|---|---|---|---|---|---|---|---|---|
| | d. | d. | d. | d. | d. | d. | d. | d. | d. | d. |
| Aberdare | 9 | — | 9 | 9 | — | 9 | 8 | 6½ | 6½ | 6½ |
| Accrington | 10 | 9½ | 9 | 9½ | 9 | 9 | 8½ | 6½ | 6½ | 6½ |
| Altrincham | 9½ | 10 | 10½ | 10 | 8½ | 10 | 9 | 6½ | 6½ | 6½ |
| Ashton-under-Lyne | 10½ | 10½ | 10 | 10½ | 9 | 10 | 9 | 6 | 6 | 7 |
| Barnsley | 9½ | 9½ | 9½ | 9½ | 9 | 9 | 8 | 7 | 7 | 7 |
| Barrow-in-Furness | 9½ | 10 | 9½ | 9½ | 9½ | 9½ | 9½ | 7 | 7 | 7 |
| Barry | 9½ | 9½ | 9½ | 10 | — | 9 | 8½ | 6½ | 6½ | 6½ |
| Bath | 8½ | 8½ | 8½ | 8 | 7½ | 7½ | 7½ | 5½ | 5½ | 5½ |
| Bedford | 8 | 8 | 8 | 8½ | 8 | 9 | 6½ | 5 | 5 | 5½ |
| Birkenhead | 11 | 11 | 11 | 11½ | 11 | 11 | 9½ | 7 | 7 | 7 |
| Birmingham | 10½ | 10½ | 10½ | 10½ | 9 | 10½ | 9 | 7½ | 7½ | 7½ |
| Bishop Auckland | 9 | 9 | 9 | 9 | 10 | 9 | 7½ | 6 | 6 | 6½ |
| Blackburn | 10 | 10½ | 10 | 9½ | 9½ | 9½ | 9½ | 6½ | 7 | 7 |
| Blackpool | 10½ | 9½ | 9½ | 9½ | 8½ | 9 | 8½ | 6 | 6 | 6 |
| Bolton | 10 | 10½ | 10 | 10½ | 9½ | 10 | 9½ | 6-7 | 6-7 | 6-7 |
| Bournemouth | 8½ | 8½ | 8½ | 8½ | 8½ | 8½ | 8 | 6 | 6 | 6 |
| Bradford | 10 | 10 | 9 | 9½ | 9½ | 10 | 8½ | 7 | 7 | 7 |
| Bridgwater | 6½ | 6½ | 6½ | 6½ | 6½ | 6½ | 6 | 4 | 4 | 4 |
| Brighton | 8-9 | 8½ | 8½ | 8½ | — | — | 7 | 6 | 6 | 6 |
| Bristol | 10 | 10 | 10 | 10 | — | 10 | 9½ | 7 | 7 | 7 |
| Burnley | 10 | 9½ | 9½ | 9½ | 8 | 9 | 9½ | 7 | 7 | 7 |
| Burton-on-Trent | 9 | 9 | 9 | 9 | 8½ | 9 | 8½ | 6½ | 6½ | 6½ |
| Bury | 10½ | 10½ | 10 | 9 | 9½ | 10 | 9 | 6 | 6 | 6 |
| Cambridge | 9 | 8½ | 8½ | 9 | 9 | 9 | 7 | 5½ | 5½ | 5½ |
| Canterbury | 8½ | 8 | 8 | 10 | — | 8½-9 | 6½ | 5 | 5 | 5 |
| Cardiff | 9½ | 9½ | 9½ | 9½ | 9½ | 9½ | 8½ | 7 | 7 | 7 |
| Chatham | 8 | 9 | 9 | 9 | 9 | 9 | 7 | 6 | 6 | 6 |
| Chelmsford | 8 | 7½ | 8 | 9 | — | 7½ | 6½ | 5 | 5 | 5½ |
| Cheltenham | 8½ | 8½ | 8½ | 8½ | — | 8½ | 8 | 6 | 6 | 6 |
| Chester | 9½ | 10 | 9½ | 9½ | 9½ | 9½ | 8½ | 5½ | 6½-6½ | 5-5½ |
| Chesterfield | 8½ | 9 | 8 | 8 | 9 | 8½ | 7½ | 5½ | 5½ | 5½ |
| Colchester | 8 | 8½ | 8½ | 9 | 8 | 9 | 8 | 5½ | 5½ | 5½ |
| Coventry | 9½ | 9½ | 9½ | 9½ | 9½ | 9½ | 8½ | 7½ | 7½ | 7½ |
| Crewe | 7 | 8 | 7½ | 9 | 8 | 7½-8 | 7½ | 5 | 5½ | 6 |
| Darlington | 9½ | 9½ | 9 | 9½ | 10 | 9 | 8½ | 6½ | 6½ | 6½ |
| Derby | 9½ | 9½ | 9 | 9 | 9 | 9 | 8 | 6½ | 6½ | 7 |
| Doncaster | 9½ | 9½ | 9 | 9 | 9 | 9 | 8 | 6½ | 6½ | 7 |
| Dudley | 8½ | 8½ | 8½ | 8½ | 8½ | 8 | 7½ | 5½ | 5½ | 5½ |
| Durham | 9 | 9 | 9 | 9 | 9½ | 9 | 8 | 6 | 6 | 6½ |
| East Glamorgan and Monmouthshire Valleys | 9 | 9 | 9 | 9 | — | — | 8 | 6½ | 6½ | 6½ |
| Exeter | 8 | 8½ | 8 | 8 | 7½ | 7½ | 7 | 5½ | 5½ | 5½ |
| Folkestone | 8½ | 8½ | 8½ | 9 | 8½ | 8½ | 7-7½ | 6½ | 6½ | 6½ |
| Gloucester | 8 | 8½ | 8½ | 8 | 8 | 8½ | 8 | 6 | 6 | 6 |
| Grantham | 8 | 8 | 7½ | 7½-8 | 7½-8 | 7 | 6½ | 5 | 5 | 5 |
| Grays | — | 10 | 10 | — | — | 9½ | 8½ | 7 | 7 | 7 |
| Grimsby | 9 | 9 | 9 | 9 | 9 | 8 | 8½ | 7 | 7 | 7 |
| Great Yarmouth | 8 | 8 | 8 | — | 8 | 8 | 6½ | 5 | 5 | — |
| Halifax | 9½ | 9½ | 9 | 8½ | 8½ | 9 | 8½ | 6½ | 6½ | 6½ |
| Harrogate | 9½ | 9½ | 9 | 9 | 8 | 9 | 8½ | 6½ | 6½ | 6½ |
| Hartlepools | 9 | 10 | 9½ | 10 | 10 | 10 | 9 | 7 | 7 | 7½ |
| Hastings | 8½ | 8 | 8 | 8½ | 8 | 8 | 7 | 6½ | 5½ | 5½-6 |
| Hereford | 8 | 8 | 7½ | 8½ | 8 | 7 | 6½ | 5½ | 5½ | 5½ |
| Huddersfield | 9½ | 9½ | 9 | 9 | 10 | 9 | 8½ | 6½ | 6½ | 6½ |
| Hull | 10½ | 10 | 10 | 10 | 10 | 9½ | 8½ | 7½ | 7½ | 7½ |
| Ipswich | 8½ | 8½ | 8½ | 9 | 8½ | 8½ | 7 | 5½ | 5½ | 5½ |
| Lancaster | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 5½ | 6 | 6 |
| Leamington Spa | 9 | 9 | 9 | 8½ | 8½ | 8½ | 7½ | 6 | 6 | 6 |
| Leeds | 10 | 10 | 10 | 10 | 9 | 9½ | 8 | 7 | 7 | 7 |
| Leicester | 9½ | 9½ | 10 | 10½ | 9½ | 9½ | 9 | 7 | 7 | 7½ |
| Lincoln | 9 | 8½ | 8½ | 9 | 8 | 8½ | 8 | 6 | 5½ | 6 |
| Liverpool | 11 | 11 | 11 | 11 | 10½ | 11 | 9½ | 7 | 7 | 7 |
| Llanelly | 9½ | 9½ | 8½ | 8½ | 9 | 8½ | 8 | 5½ | 5½ | 5½ |
| London | 11½ | 11½ | 11½ | 11½ | — | 1s. | 9 | 8 | 8 | 8 |
| Loughborough | 9 | 8½ | 8½ | 9 | 9 | 8½ | 7½ | 5½ | 5½ | 5½ |
| Luton | 9½ | 8½ | 8½ | 8½ | 9 | 8½ | 7½ | 5½ | 5½ | 5½ |
| Maidstone | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 6 | 6 | 6 |
| Manchester | 10 | 10½ | 10½ | 11 | 10 | 10 | 9½ | 6½ | 6½ | 7½ |
| Mansfield | 8½ | 9 | 8½ | 8½ | — | 8½ | 8 | 6 | 6 | — |
| Merthyr Tydfil | 9½ | 9½ | 9½ | 9½ | 8½ | 8 | 8 | 6½ | 6½ | 6½ |
| Middlesbrough | 9 | 10 | 9½ | 10 | 10 | 10 | 8½ | 7 | 7 | 7½ |
| Newcastle-on-Tyne | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 6½ | 6½ | 6½ |
| Newport, Mon. | 9½ | 9½ | 9½ | 9½ | 8½ | 9½ | 8½ | 6½ | 6½ | 6½ |
| Northampton | 9 | 9 | 9 | 9 | 8½ | 9 | 8 | 6 | 6 | 6 |
| Norwich | 8 | 8½ | 8½ | 8½ | 8 | 8½ | 7 | 5½ | 5½ | 5½ |
| Nottingham | 10 | 10 | 10 | 10½ | 9½ | 10 | 9 | 7½ | 7½ | 8 |
| Oldham | 10½ | 10½ | 10½ | 10 | 9 | 10 | 9½ | 7 | 7 | 7½ |
| Oxford | 9 | 8½ | 8½ | 8 | 8½ | 7½ | 6 | 6 | 6 | 6 |
| Plymouth | 9 | 9 | 9 | 9 | 9 | 9 | 7½ | 6 | 6 | 6 |
| Pontypridd | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 6½ | 6½ | 6½ |
| Portsmouth | 9½ | 9½ | 9½ | 9½ | — | 8½ | 7½ | 7 | 7 | 7 |
| Preston | 10½ | 10½ | 10 | 9½ | 9½ | 10 | 9½ | 5½ | 6 | 6½ |
| Reading | 8½ | 9 | 9 | 9½ | — | 9 | 7½ | 6 | 6 | 6 |
| Rochdale | 10 | 10½ | 10 | 9½ | 8½ | 9½ | 9 | 6½ | 6½ | 7 |
| Rochester | 8 | 9 | 9 | 9 | 9 | 8½ | 7 | 6 | 6 | 6 |
| Rugby | 8½ | 8½ | 8½ | 8½ | 8 | 9½ | 8½ | 5½ | 5½ | 5½ |
| St. Albans | 9 | 9 | 9 | 9-10 | 9 | 9-10 | 8 | 8½ | 6 | 6½ |
| St. Helens | 9 | 9½ | 10 | 9½ | 9½ | 9½ | 9½ | 6 | 6 | 6 |
| Scarborough | 8½ | 9 | 8½ | 8½ | 8 | 8 | 7½ | 6½ | 6½ | 6½ |
| Sheffield | 10½ | 9½ | 9½ | 9½ | 9½ | 9½ | 8½ | 6½ | 6½ | 6½ |
| Shrewsbury | 8½ | 8½ | 8½ | 9½ | — | 8½ | 7 | 5½ | 5½ | 5½ |
| Southampton | 8½ | 9½ | 9½ | 8 | — | 9½ | 8½ | 6½ | 6½ | 6½ |
| Southend-on-Sea | 9 | 9 | 9 | 9 | P'cework | 9 | 7 | 6 | 6 | 6 |
| Southport | 10 | 10 | 9½ | 9½ | 9½ | 9½ | 9½ | 6 | 6 | 6 |
| South Shields | 10 | 10 | 10 | 10 | 10 | 8½ | 9 | 6½ | 6½ | 6½ |
| Stockport | 10½ | 10 | 10 | 10½ | 9 | 10 | 8½ | 6 | 6½-7 | 7½ |
| Stockton-on-Tees | 9 | 10 | 9½ | 10 | 10 | 10 | 9 | 7 | 7 | 7½ |
| Stoke-on-Trent | 9 | 9½ | 9 | 9 | — | 8½ | 8½ | 6 | 6 | — |
| Stroud | 7½ | 7½ | 7½ | 7½ | 7½ | 7½ | 7 | 5 | 5 | 5 |
| Sunderland | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 6½ | 6½ | 7 |
| Swansea | 9½ | 9½ | 9½ | 9½ | 8½ | 9 | 9 | 6½ | 6½ | 6½ |
| Taunton | 7 | 7 | 7 | 7 | — | 6 | 6½ | 4½ | 4½ | 4½ |
| Torquay | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 5½ | 5½ | 5½ |
| Wakefield | 9½ | 9½ | 8½ | 9½ | 8½ | 9 | 8 | 7 | 7 | 7 |
| Walsall | 9 | 8½ | 9 | 8½ | 8½ | 8½ | 7½ | 6½ | 5½ | 6½ |
| Warrington | 8½ | 9½ | 9½ | 10 | 8½ | 9½ | 8½ | 5½-6 | 6 | 6-6½ |
| West Bromwich | 9½ | 9½ | 9½ | 9½ | — | 9 | 7½ | 6½ | 6½ | 6½ |
| Wigan | 10 | 10½ | 9½ | 9½ | 9 | 9½ | 9½ | 7 | 7 | 7 |
| Windsor | 9 | 9 | 9 | 10 | — | 9 | — | 6 | 6 | 6 |
| Wolverhampton | 9½ | 9½ | 9½ | 10 | 8 | 10 | 8 | 6½ | 6½ | 6½ |
| Worcester | 8½ | 9 | 9 | 8½ | 8½ | 8½ | 7½ | 6 | 6 | 6 |
| York | 9½ | 9½ | 9 | 9½ | 9½ | 8½ | 8 | 6½ | 6½ | 6½ |

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

date, and so the consumer who pays cash—and he is generally the large consumer—must enjoy an advantage over the small consumer unless he is equally ready to pay cash. Then there is the state of the market, which may be overstocked and offer advantages in price to a large buyer because of the necessities of a seller.

Taken altogether, it would seem that the provision imposed by the Government means merely that, other things being equal, no preference shall be shown between one consumer and another. A similar condition is supposed to govern the dealings of railway companies with traders.

But even if the price remains the same in the circumstances last supposed, it is obvious that a consumer who comes with a large order will be more welcome and receive better attention than the consumer who brings a small order.

In conclusion it appears that there are advantages inherent in large buying which small buyers cannot secure except by combining among themselves to buy co-operatively, as is being done in agriculture by certain farmers' societies.

The extraordinary thing, however, is the slowness with which co-operative buying spreads. It is probably unknown in this country in the building trade, although it has been successfully practised by the building trade in Switzerland for years.

## WAGES IN THE BUILDING TRADE.

**Blackburn.**—The stonemasons are demanding an increase from May 1, 1915, from 10d. to 10½d. for fixers and wallers. They also desire a reduction in the working hours and an alteration in the overtime rule.

**Chorley.**—The operative bricklayers have given six months' notice of a demand for an advance in wages of ½d. per hour (9½d. to 10d.).

**Littleborough.**—The stonemasons in this district have given six months' notice, expiring May 1, 1915, of a demand for an increase in wages of ½d. per hour (10d. to 10½d.).

**Manchester.**—The Electrical Trades Union has given six months' notice of a demand for an advance in wages of 1d. per hour (9½d. to 10½d.) for wiremen and cable jointers.

**Rochdale.**—The stonemasons in this district are demanding an advance in wages of ½d. per hour (10d. to 10½d.), and alterations to the overtime and worked stone rules as from May 1, 1915.

**Rossendale.**—The Gas Workers' Union has given notice on behalf of the builders' labourers for an advance in wages of 1d. per hour (6d. to 7d.) as from May 1, 1915.

## PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

BARROW.—Plans passed:—Two dwelling-houses in Vickerstown Park, for Messrs. Rainey Bros.; six houses in Lord Roberts-street; five houses in Gatacre-street; fifteen houses in Douglas-street; fourteen houses in Kitchener-street, for the Walney Housing Company, Ltd.; two pairs of dwelling-houses in Station-road, Roose, for Mr. W. H. Paul; sixteen semi-detached houses in French and Knox streets, for the Walney Housing Company.

Berwick.—The T.C. has come to an arrangement with Northumberland C.C. whereby the latter has agreed to erect a new secondary school for both sexes in the burgh to supersede the present High School for Girls and the Grammar School.

Blean.—The B.G. have been informed that the L.G.B. has sanctioned the execution of drainage work at the Workhouse, at a cost not exceeding £4,000.

Brandon.—Plans passed by U.D.C.:—House at Meadowfield by Mr. H. Pye; byre at Scouts House Farm, for Messrs. Cochrane & Co., Ltd.

Buckingham.—Plans for the erection of a new building on the Rookery Farm, Tingewick, have been sanctioned.

Bulkington.—Plans passed by U.D.C. for two houses and shops in Leicester-street, for Mr. G. Farndon.

Carnarvon.—Plans passed for additions and alterations to Bryn Seiont, for the King Edward Memorial Committee.

Cardiff.—The L.G.B. have sanctioned a loan of £28,000 to the T.C. for new mains and services.

Carlisle.—The T.C. has instructed the surveyor to prepare plans and estimates of the cost of

* See also our list of Competitions, Contracts, etc., on page 585.

building twelve houses on a suitable site in each of the following districts:—Denton Holme, Willow Holme, and Boustead's Grassing.

Cheltenham.—The Trustees of the Delancey Fever Hospital are proposing to spend £850 on providing accommodation for nurses.

Chesterfield.—Soresby-street School is to be rebuilt, at a cost of £6,380, and a new school is to be erected at Jawbones Hill, Derby-road, at an outlay of £5,464, both these sums being exclusive of site.

Coalville.—Plans passed for additions to factory, Mantle-lane, for Messrs. R. Walker & Son; two houses and shops, Ashby-road, for Mrs. Hammond; house, Park-road, for Mr. F. Gough.

Coppull.—The tender of Messrs. Baxendale Bros., Chorley, has been accepted for the erection of Council school.

Darlington.—Plans passed:—Business premises in Clifton-road, for Mr. Kellett; new streets, Throstle Nest, Messrs. Taylor & Minor; twenty houses, Coniton-treet, Mr. J. E. Chilton.

Darwen.—The L.G.B. have sanctioned the borrowing by the T.C. of £6,550 for the erection of new baths.

Droylsden.—Plans of three houses in North-road, for Mr. Harry Lomas, of Holly-street, have been approved.

Dunmow.—L.G.B. inquiries have been held into the applications of the R.D.C. to borrow money for the erection of four cottages each at Felsted and Stebbing.

Eton.—Plans passed by R.D.C.:—New drainage and farm buildings at Hawkins, Beaconsfield-road, Farnham, for Mr. S. S. Spriggs; detached cottage in Staines-road, Wraysbury, for Mr. E. W. Todd; additions to the Crown public-house, Langley, for Messrs. Ashby; garage, etc., Ivy House, High-street, Burnham, for Dr. Creasy.

Evesham.—The L.G.B. has sanctioned a loan of £2,500 to the R.D.C. for the Harvington water scheme.

Falmouth.—The T.C. have approved a plan by the surveyor showing how a portion of the Penwerris site could be laid out for workmen's dwellings, and the remainder reserved as a site for the new cemetery.

Gainsborough.—Messrs. Rose Bros., of the Albion Engineering Works, have purchased 40 acres of land, bordering the Trent between Gainsborough and Morton, for the purpose of establishing in the near future a malleable iron foundry and engineering works.

Glasgow.—Linings granted by the Dean of Guild Court:—Corporation of Glasgow, to erect a children's playground, caretaker's box, and shelter at Bridge-street, Partick; a fire-station and three tenements of dwelling-houses in Wallace-street, Tradeston; and recreation-rooms at the Eastern police buildings in Tobago-street, Calton; Messrs. William Beardmore & Co., Ltd., extensions to the shop for electricians at their works at Parkhead, to extend the power-house at Rigby-street, and to construct a large machine shop in Old Edinburgh-road; Messrs. Alley & M'Lellan, Ltd., engineers, to make alterations to the valve shop at the Sentinel Works, Polmadie; Messrs. Barr & Stroud, Ltd., engineers, to reconstruct and make additions to their works in Caxton-street, Anniesland.

Hastings.—The T.C. have formally sanctioned the plans for the foundations of the new East Sussex Hospital.

Hendon.—The Committee of the Bishop of London's Fund has approved the plans of the proposed new church at Colindale, and has made a grant of £1,500 towards the cost, which will be about £6,500.

Hornsey.—Plans passed:—House in Etheldene-avenue, Muswell Hill, by the Rookfield Garden Village, Ltd., of Muswell Hill; vicarage at Holy Innocents' Church, Tottenham-lane, Hornsey, by Mr. W. Tout, of Hendon; conversion of dwelling-house into shop, No. 369, Archway-road, Highgate, by Mr. Chas. Gordon.

Jarrow.—Additions are to be made by the T.C. to the administrative block of the Primrose-hill Hospital, and two additional pavilions are also to be provided.

Keighley.—The T.C. have approved plans of five new streets called Wheathead-drive, etc., for Mr. Fred Simpson.

Lewisham.—Messrs. Kirk & Kirk, Perry-rise, to rebuild and drain the Prince of Wales public-house; Messrs. T. H. Sawyer & Son, Bromley-road, nine houses on the east side; and Mr. L. S. Rogers, Como-road, six houses on the east side.

Lichfield.—The T.C. have adopted a scheme for the erection of twenty workmen's dwellings on a site on Beacon-hill. It is proposed to build the houses in four blocks, two blocks containing six cottages each, the other blocks to contain four cottages each. There are to be ornamental forecourts and large gardens at the rear, and the cottages are to be let at 5s. a week. The total cost is estimated at £4,100, including the consruction of a new street along the frontage.

Loughborough.—Plans passed by T.C.:—House, Knighthorpe-road, for Mr W. Caldwell, subject to amendment; two houses (amended plan), York-road, for Messrs. Wileman & Gange.

Meriden.—Plans passed by R.D.C.:—Fifty houses and shops, Ward End, Castle Bromwich, for Mr. J. C. Payne, Foley-road, Ward End, near Birmingham; house, Mill-lane, Berkwell, for Mrs. Thurston, of Kenilworth; two new cottages for Mrs. L. Naylor, West Orchard, Coventry, in Berkswell-road, Tile Hill.

Moira.—Plans passed for electric sub-station at Rawdon Colliery, for the Moira Colliery Company.

Nottingham.—The T.C. have decided to proceed with their scheme of deepening the River Trent between Nottingham and Newark in order to make Nottingham an inland port accessible for large boats from the Humber. It is proposed to invest the reserve funds of the gas and other municipal undertakings in the enterprise, which will cost over £150,000.

Nuneaton.—The L.G.B. have given sanction to the T.C. raising the following loans:—£650 for works of stormwater drainage in Coton-road, Princes-street, and Dugdale-street; £350 for the erection of a public sanitary convenience off Queen's-road; £430 for the purchase of a steam-roller.

Penzance.—Application is to be made to the L.G.B. for sanction to borrow £358 for the heating of the municipal buildings and offices, and for the furnishing and lighting of the Mayor's parlour.

Pontypool.—Mr. J. C. Hanbury, J.P., D.L., Pontypool Park, has presented to the Welsh National Memorial Association a valuable site for their proposed tuberculosis hospital in Monmouthshire. It is proposed to provide accommodation at the hospital for 150 beds, and the cost is estimated at £25,000.

Rochester.—The T.C. have approved a plan for additions to St. William's Hospital, for the Rochester and Chatham Joint Hospital Board.

Romford.—Plans passed by the R.D.C.:—Store at the Sterling Works, Dagenham, for the Sterling Telephone and Electric Company, Ltd.; addition to house, Nelmes-road, Hornchurch, for Mr. T. A. Dennis; six houses on the west side of Athelstan-road, Harold Wood, for Mr. A. Clyde.

Rye.—The B.G. have selected a site at Beacon Field, Playden, for the erection of a home for the workhouse children. Plans have to be prepared for a home to accommodate twenty-four juveniles.

Sheffield.—The City Engineer has received instructions to proceed with the laying out of Abbey-lane Cemetery. The Health Committee propose to spend £2,600 on improvements and additions at Glossop-road Baths.

Sittingbourne.—Two pavilions are to be erected by the War Office for the treatment of cases of infectious diseases amongst the troops in the district.

Southampton.—The T.C. have received a communication from the L.G.B. sanctioning the borrowing of £16,000 for the reconstruction of the Eastern District public elementary school.

Sutton.—Plans approved for two houses in Benhill-road, for Mr. Richards; and a shop in Carshalton-road, for Dr. Halsted.

Thames Ditton.—The L.G.B. has given sanction to the borrowing of £1,250 for making up Raleigh-drive and Loseberry-road, Claygate.

Wistanswick.—By the will of the late Miss M. Mercer £1,000 has been left to build a new Congregational chapel.

Wolverhampton.—A L.G.B. inquiry has been held in connection with the application of the Corporation for sanction to borrow £3,165 for erecting firemen's dwellings.

York.—Plans passed:—Messrs. T. Horsley & Sons, motor garage and workshops, Blossom-street; Mr. J. Hamilton, two houses, Holgate, Acomb-road; Messrs. Rowntree & Co., Ltd., hoist tower and motor chamber, Haxby-road Works; Mr. E. Waudby, combined drainage, 17, 18, and 19, Dundas-street; Mr. F. Wilkins, alterations to house, White Cross-road; Messrs. Rowntree & Co., Ltd., additional store, Haxby-road Works.

## GENERAL BUILDING NEWS.

ALTERATIONS TO HOUSE, LONDON.

Extensive alterations and decorations have recently been carried out at a town residence at 25, Montpelier-square, Knightsbridge. The architect is Mr. A. Winter Rose, the contractors Messrs. William F. Blay, Ltd., Railway House, Dowgate-hill, E.C.

FACTORY, BERMONDSEY.

A new biscuit factory is being erected for Messrs. Peek, Frean, & Co., Ltd., at Bermondsey, at a cost of about £20,000. The architect is Mr. J. Moir Kennard. The steel-work is by Messrs. Dorman, Long, & Co., Ltd., and the contractors are Messrs. William F. Blay, Ltd., Railway House, Dowgate-hill, E.C.

## TRADE NEWS.

Under the direction of Mr. William Dunbar, C.E., Burgh Surveyor, Tranent, Boyle's latest patent "air-pump" ventilators have been applied to the Town Hall, Tranent, Scotland.

Messrs. Patman & Fotheringham, Ltd., 100 and 102, Theobald's-road, London, W.C., also of Park-street, Islington, N., have been successful in securing the following contract:—Rebuilding No. 5, Holles-street (offices and shop), Oxford-street, W., Mr. Lionel Barrett, A.R.I.B.A., architect.

A flat roof has been provided at Southmead Workhouse Infirmary and has been surfaced with "Pudloed" cement.

## TRADE CATALOGUE.

We have received a pamphlet dealing with the Holophane system of illumination (Holophane, Ltd., 12, Carteret-street, London, S.W.). The system can be applied in many ways in globes, bowls, and reflectors of every type and design, and by its use all the requirements of good lighting can be met; that is to say, there must be sufficient light for the objects to be readily seen by the light they reflect, and therefore more light must be thrown on dark objects than on light ones, while too much illumination will tire the eyes. The intrinsic brilliancy of the light sources should be low and the light itself placed out of the direct line of view, and streaks or striations in the resulting illumination should be avoided. Holophane glassware aims at securing a complete diffusion and softening of the light with the removal of harmful glare and a better distribution of the rays. It is specially pressed and annealed to secure toughness, and the moulds are cut so that the angles of the glass can be pressed up very sharply. The contour of the reflector is designed to give a predetermined distribution curve when covered with ribbings or prisms, and the globes are covered with vertical ribbings on the interior and horizontal ones on the exterior. The interior ribs are visible, and the surface of the globe appears to be divided up into prismatic points arranged in regular rows. The pamphlet before us gives the average foot-candle intensities for the different purposes indicated, ranging from 15 for a billiard table and 12 for an operating table to 1 for a wharf. For shop-windows the range is 8 for light goods to 20 for dark ones. The reflectors, globes, and other fittings are well and simply designed, and their cost is moderate. The company also manufacture a Lumeter for measuring candle-power, surface brightness, and illumination, which is portable and is used by the House of Commons, Home Office (Factory Department), London County Council, General Post Office, and the principal English railways and electric and gas companies.

SOUND-RESISTING. FIRE-RESISTING.
FRED^K JONES & CO., LTD.
Slag Wool
LONDON
8, Perron St., Kentish Town.
MANCHESTER
38, Duncan St., Salford.
MIDDLESBORO'
South Bank Works.

## ST. BARTHOLOMEW THE GREAT AND CLOTH FAIR, SMITHFIELD.

THIS interesting group of old houses, which, with the side entrance of St. Bartholomew's Church, has for long been the delight of artists and formed perhaps the most picturesque street vista in London, has at last been swept away, the houses having been demolished on the 24th ult. These structures, whose overhanging floors and wattle and plaster walls must have seen the days of the earlier Tudors, were intimately associated with the great cloth fair, to which, in those days, came merchants from Italy and Flanders with their wares for the natives of old London. Few other parts of the city are so rich in historic memories.

## CAPTURING ENEMY PATENTS.

THE following list of British patents which have been granted in favour of residents of Germany, Austria, or Hungary is furnished in view of the new Patents Acts, which empower the Board of Trade to confer upon British subjects the right to manufacture under enemy patents, and is specially compiled for the *Builder* by Mr. Lewis Wm. Goold, chartered patent agent, 5, Corporation-street, Birmingham. It is desirable in the first instance to obtain the latest particulars upon the Patents Register. If any patent listed has been assigned to a non-enemy proprietor, the law does not apply:—

11,802 of 1911.—Windows. Casement windows are divided to form upper and lower windows by means of an horizontal cross-bar which is collapsible in parallel ruler fashion, so that spaces for ventilation are formed at the top and bottom of each casement and the casements may be opened outwards or inwards on their pivots: G. Knappe, Germany.

11,926 of 1911.—Joist floors; ceilings: E. Pruss, Berlin.

11,935 of 1911.—Cauldrons; heating of materials such as asphalt in a rotating holder: T. & N. Udelhoven, Germany.

11,942 of 1911.—Plastic compositions. A plastic composition for imitating the cames of leaded glass consists of a mixture of double silicate of potash and soda, cement liquor, powdered marble, powdered pumice-stone, powdered lime, graphite, powdered aluminium, tin, and zinc. The mixture is applied to the glass by means of a squirt: T. Schweizer and Pety-Glasmalerei-Ges., Germany.

12,105 of 1911.—Cleaning windows. In apparatus for removing moisture from shop-windows, in which a wiper strip is clamped between a duplex bar furnished with rollers running channelled guides and reciprocated by cords passing over overhead pulleys, the guideways are fixed to slotted angle irons, so that the wiper can be adjusted in right-angles to the pane: J. N. Blumenschein, Germany.

12,150 of 1911.—Floors. A hollow floor comprises pairs of beton slabs fitted between the joists and engaging each other by means of a semi-cylindrical shoulder and corresponding recess, the ends of the slabs being bevelled, so that they may fit different spans: P. Dahm, Germany.

12,289 of 1911.—Lifts, hoists, etc.; safety brake mechanism: F. Huth, Germany.

12,566 of 1911.—Glue, gelatine, etc.: Baron von Conway Girsewald, Berlin. Dated January 17, 1911.

12,836 of 1911.—Artificial marble. Imitation marble slabs and the like are made by spraying or painting veins on a plate of glass in a frame mounted loosely on spiral springs, applying a backing of body material, and shaking the frame to distribute the veins: C. Back and R. Wacik, Germany.

13,294 of 1911.—Fire-escapes. Relates to ladder escape of the type having a fixed side, a movable side, and pivoted rungs, so that the ladder can be folded against the wall: A. Hansel, Germany.

13,895 of 1911.—Hinges: C. Tonjes, Germany.

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Viscount Peel, Chairman, presiding.

*Tenders.*—The following tenders were received:—For the enlargement of the Haverstock-hill School for Mentally Defective Children (St. Pancras, W.): for the erection of dwellings on the first section of the Tabard-street area; for boiler cleaning.

*North Woolwich Pumping-Station and Rising Main to the Northern Outfall—Capital Estimate, £45,600.*—It was agreed on the recommendation of the Main Drainage Committee that North Woolwich pumping-station be enlarged, and a new rising main from that station to the northern outfall be constructed at an estimated expenditure of £45,600.

*North-Western Polytechnic: Application for Additional Grant for Erection of Building.*—On the recommendation of the Education Committee it was agreed to approve the suggestions of the Charity Commissioners with regard to the appropriation of a certain proportion of income and the provision of permanent buildings for recreative purposes in the North-Western Polytechnic (St. Pancras, W.), and that, on the understanding that such provision is made in accordance with the suggestions contained in the letter from the Charity Commissioners to the Council, dated November 11, 1914, the Council is prepared to approve the signing of the building contract and to make the necessary arrangements for payment of its building grant; and that the governing body of the Polytechnic be so informed.

*Putney Bridge.*—It was agreed, on the recommendation of the Improvements Committee, that the Metropolitan Borough Councils of Battersea, Fulham, and Wandsworth be informed that the Council, while considering that the Putney Bridge improvement should be carried out at as early a date as possible, does not see its way to effect the suggested improvement forthwith. The Improvement Committee, however, were instructed to provide for the requisite preliminary works in order that the widening might be commenced whenever ordered by the Council.

*Tramway System.*—Replying to questions as to the cause of the breakdown of the Council's tramway system on Friday evening last, Mr. Hume, the Chairman of the Highways Committee, stated that the origin of the trouble was the bursting of a transformer-box at the Greenwich Generating Station, which had been in use for about ten years, and which would have been done away with in the course of another five days. In connection with the alterations being carried out at the station, there was a heavy wooden staging close by which was set alight by the oil thrown out, and the heavy cables running from the generator to the switchboard were destroyed. The generator was completely cut off from the switchboard, and the station "shut down." Mr. Hume went on to say that the accident could not have occurred had it not been for the proximity of the wood staging, which was purely temporary. There was no loss of life or personal injury. The accident, he said, was not due in any way to a fault in the system; it was one against which human ingenuity could not provide.

## FOREIGN AND COLONIAL.

### Building Material, Brazil.

The *Diario Oficial* (Rio de Janeiro) of November 6 publishes a Decree approving an extraordinary credit of 500,000 milreis (about £29,100) in favour of the Brazilian Ministry of Communications and Public Works with the object of completing the work on the new postal telegraph building in Nictheroy, State of Rio de Janeiro.

### Heating and Ventilating Plant for Parliament Buildings, Wellington, N.Z.

H.M. Trade Commissioner reports that tenders are invited in the local Press for heating and ventilating plant for the new Parliament buildings at Wellington. Tenders on the proper forms will be received up to noon on January 8, 1915, at the Public Works Office, Wellington, New Zealand. (It will be observed that the time for the receipt of tenders is limited, and this intimation therefore will be of use only to firms having agents in New Zealand who can be instructed by cable.) Drawings, specifications, and conditions of contract may be obtained at the Public Works Offices at Auckland, Wellington, Christchurch, and Dunedin, and a copy of the specification and schedule of quantities may be consulted by United Kingdom heating and ventilating engineers, at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

TERMS OF SUBSCRIPTION.

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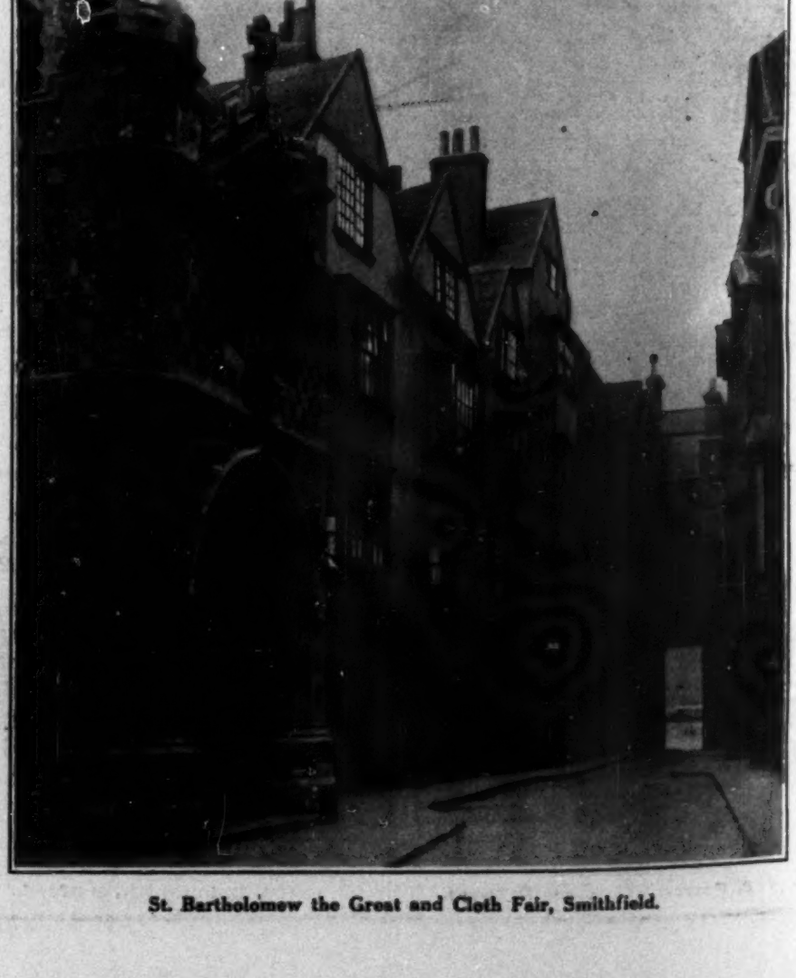

St. Bartholomew the Great and Cloth Fair, Smithfield.

# List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. **Those with an asterisk (*) are advertised in this number:** Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointment, xx.; Auction Sales, xxii. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

## Competitions.

DECEMBER 31.—**Dumfries.**—WORKMEN'S HOUSES.—The T.C. of Dumfries invite architects to submit competitive plans for the erection of workmen's houses in Dumfries. Particulars of the Town Clerk, Dumfries.

JANUARY 11, 1915. — **Oxford.** — WORKMEN'S DWELLINGS.—Designs invited from local architects by the Corporation for cottages. Particulars from the City Estates Surveyor, Town Hall.

* JANUARY 23. — **Doncaster.** — LAYING-OUT 20 ACRES.—The Doncaster T.C. invite architects to submit designs for laying-out site and erection of 102 workmen's dwellings.

FEBRUARY 8.—**Liverpool.**—WORKMEN'S DWELLINGS.—The Liverpool Corporation invite designs for workmen's dwellings for about 500 persons. Premiums, £100, £50, and £25 respectively. See advertisement in issue of November 13.

* NO DATE.—**Bradford.**—The Bradford Corporation invite designs for replanning of streets.

## Contracts.

### BUILDING AND PAINTING.

*The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.*

DECEMBER 19. — **Horsham.** — ALTERATIONS.—Messrs. Timothy White Company, Ltd., invite tenders for alterations to their premises, Nos. 62-63, West-street, Horsham. Specification at their branch, 62, West-street, Horsham.

DECEMBER 21.—**Eastbourne.**—CONVENIENCES.—Erection of ladies' conveniences (1) near the pier; and (2) near the Wish Tower. Specifications of the Borough Surveyor, Town Hall.

DECEMBER 21.—**Hendon.**—RIFLE RANGE.—Erection of miniature rifle range for the U.D.C. Specifications of Mr. S. S. Grimley, Surveyor, Council Offices. Deposit, £1.

DECEMBER 21.—**St. Annes-on-the-Sea.**—BATH, ETC.—Construction of an open-air swimming-bath on the foreshore, and the erection of dressing-boxes, café, etc., for the St. Annes-on-the-Sea U.D.C. Quantities of the architect, Mr. Fred Harrison, 30, Willow-street, Accrington. Deposit, £1.

DECEMBER 22.—**Bodmin.**—ALTERATIONS.—Additions and alterations to the laundry, for the Visiting Committee of the Cornwall County Asylum. Quantities of the Surveyor-in-Charge, Mr. W. J. Jenkins, St. Nicholas-street, Bodmin.

DECEMBER 22.—**Darlington.**—PAINTING.—Painting inside of car-sheds and three workshops at the electricity works, for the Corporation. Specification of Mr. J. R. P. Lunn, Electricity Works, Darlington.

DECEMBER 22.—**Keighley.**—SHED.—Extending shed at Victoria Park. Particulars of the Borough Engineer, Town Hall, Keighley.

DECEMBER 22.—**Slatefield.**—SCHOOL.—Erection of new National school at Slatefield, Co. Galway. Specification at Parochial House, Ballinakill.

DECEMBER 23.—**Barrow-in-Furness.**—VARIOUS.—New sanitary fittings for outdoor water-closets at the Workhouse, and for alterations to a yard wall. Quantities of Mr. H. T. Fowler, A.R.I.B.A., Cornwallis-street, Barrow.

DECEMBER 23.—**Chorley.**—ASHBINS.—Supply of galvanised-steel ashbins for twelve months, for the Corporation. Specification of the sanitary inspector, Town Hall, Chorley.

DECEMBER 23.—**Chorley.**—SHELTERS.—Erection of shelters and caretaker's office at Talton Recreation Ground, for the Corporation. Quantities of the Borough Surveyor, Town Hall.

DECEMBER 24.—**Lytham.**—ROOF.—Erection of roof over coal-breaker pit at gasworks, for the U.D.C. Particulars of the gas manager, at the works, Lytham.

DECEMBER 26.—**Glasgow.**—PAINTING, ETC.—For painter and cleaning works required at Gorbals and Parkhead District Libraries. Specifications at the Office of Public Works, 64, Cochrane-street, Glasgow.

DECEMBER 29.—**Haslingden.**—LAUNDRY, ETC.—Erection of laundry and extension of bakehouse for the Haslingden B.G. Quantities of Mr. H. Rose, architect, 15, Cannon-street, Accrington.

DECEMBER 31.—**Docking.**—HOUSES.—Erection of six dwellings, for the Docking R.D.C., at Brancaster. Quantities of Mr. J. H. Stoughton, Clerk, Fakenham, Norfolk.

DECEMBER 31.—**Ovenden.**—HOUSE.—Erection of a dwelling-house at Ovenden. Quantities of Messrs. Medley Hall & Son, architects, 1, Harrison-road, Halifax.

* JANUARY 1, 1915.—**Northwich.**—POST-OFFICE.—The Commissioners of H.M. Works invite tenders for erection of a post-office at Northwich.

* JANUARY 5.—**Leigh-on-Sea.**—EXTENSION OF RETORT-HOUSE.—The Southend B.C. invite tenders for construction of an extension to the retort-house.

* JANUARY 7. — **Islington.** — PAINTING.—The Islington Guardians invite tenders for painting, whitewashing, and cleaning the Relief Office and Dispensary.

NO DATE.—**Aldershot.**—HUTS.—Erection of one or more (fifteen in all) Army recreation huts (minimum size 108 by 30) within the Aldershot Command. Mr. J. Williams Dunford, architect, 100c, Queen Victoria-street, London, E.C.

NO DATE.—**Barrow-in-Furness.**—HUTS, ETC.—Erection of barrack huts, baths, closets, miniature rifle range, etc., for the War Office. Forms of tender of the Divisional Officer, Royal Engineers, Abbey-road, Barrow.

NO DATE. — **Dolgelley.** — SCHOOL. — The Merioneth E.C. invites tenders for the erection of a new Council school at Dolgelley. Specifications of the County Architects, Messrs. Deakin & Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

NO DATE. — **Dumfries.**—DEMOLITION.—Taking down chimney stack. Particulars from Mr. James Little, builder, Ivy Cottage, Newabbey-road, Maxwelltown, Dumfries.

NO DATE.—**Ebbw Vale.**—HOUSES.—Erection of thirty-eight houses, for the Woodside Building Club, Ebbw Vale. Specifications of Mr. F. G. H. Cooper, Secretary, Woodside, Briery-hill, Ebbw Vale, Mon.

### FURNITURE, MATERIALS, etc.

DECEMBER 22.—**Brighton.**—MATERIALS.—Supply of painters' glaziers' and plumbers' materials to the Board of Guardians. Forms of tender of the Clerk, Guardians' Office, Princes-street, Brighton.

DECEMBER 22.—**Hatfield.**—ROAD MATERIALS.—Supply to the Hertfordshire C.C. of broken granite, slag, and tar-macadam required for the main roads during one year. Forms of tender of Mr. J. S. Killick, A.M.Inst.C.E., County Surveyor, Hatfield.

DECEMBER 24.—**Sunderland.**—STONE.—Supply to the Sunderland R.D.C. of the best 2½-in. hand-broken whinstone, 1-in. and 2½-in. tarred limestone, whinstone chippings, and blast furnace slag chippings from ¼ in. to dust. Mr. T. Young, surveyor, 17, John-street, Sunderland.

DECEMBER 24.—**Westbourne.**—GRANITE.—Supply to the Westbourne R.D.C. of 1,800 tons of granite quartzite or other stone. Forms of Mr. H. Norris, surveyor, West Ashling, Chichester.

DECEMBER 29. — **Sunderland.** — MATERIALS.—Supply to the R.D.C. of street lamps, fire hydrants, road gulleys, manhole covers, sanitary pipes, oils, paints, glass, etc. Information of the surveyor, 17, John-street, Sunderland.

DECEMBER 31.—**Derby.**—ROAD MATERIALS.—Supply to the Derbyshire C.C. of broken stone, such as granite, basalt, slag, limestone, tarred macadam, tarred chippings, or other suitable materials. Form of tender of Mr. J. W. Horton, County Surveyor, County Offices, St. Mary's-gate, Derby.

DECEMBER 31.—**Flint.**—ROAD MATERIAL.—Supply of broken granite and chippings, tar-macadam, and tar, for the Flintshire C.C. Forms of tender of Mr. S. Evans, County Surveyor, Mold.

### ENGINEERING, IRON, AND STEEL.

DECEMBER 21.—**Epsom.**—WAGON, TANK, ETC.—Supply to the Epsom R.D.C. of a trailer, with tipping gear, suitable for a 5-ton steam tractor; also for a tank to put into the wagon. Mr. T. E. Ware, surveyor, Epsom.

DECEMBER 22.—**Leeds.**—CRANE, ETC.—Supply to the Corporation of (*a*) an overhead travelling crane, electrically driven, to lift 60 tons, with a span of 70 ft.; (*b*) coal and ash conveying plant. Specifications from Mr. C. Nelson Hefford, Manager of the Department, 1, Whitehall-road, Leeds. Deposit, £2 2s. each specification.

DECEMBER 28.—**Bury.**—CASTINGS.—Iron castings, for the Bury and District Joint Water Board. Particulars of the Waterworks Manager, Parsons-lane, Bury.

DECEMBER 29.—**Copenhagen.**—RAILS, ETC.—Supply to the Danish State Railway Authorities of 2,000 tons of steel rails and 3,000 tons of fastenings. Copy of specification at Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

DECEMBER 31.—**Dundee.**—STEELWORK.—Supply and erection of structural steelwork for extensions to floors, etc., at Carolina Port generating-station, Dundee. Quantities of Mr. H. Richardson, General Manager, Electricity Department, Dundee.

JANUARY 1, 1915. — **Wandsworth.** — STREET LAMPS.—Supply of street lamp-columns, lanterns, etc., from March 31 next, for the Wandsworth B.C. Form of tender of Mr. D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

JANUARY 2.—**Hornsey.**—SWITCHGEAR.—Supply and erection of low-tension switchgear, etc., for the Corporation. Forms of tender of the Borough Electrical Engineer, at the Electricity Works, Tottenham-lane, Hornsey, N. Deposit, 10s. 6d.

JANUARY 6.—**Melbourne.**—CABLES.—Supply of insulated copper cables to the City of Melbourne, Australia. Specification, etc., of Messrs. McIlwraith, McEacharn, & Co., Ppty., Ltd., Agents for the Melbourne City Council, Billiter-square-buildings, London, E.C. Deposit, 5s.

JANUARY 6. — **Melbourne.** — TRANSFORMER.—Supply to Melbourne City Council of six 100-k.v.a. single-phase transformers. Tender form, etc., of Messrs. McIlwraith, McEacharn, & Co., Ppty., Ltd., Agents for the Melbourne City Council, Billiter-square-buildings, London, E.C. Deposit, 5s.

JANUARY 6.—**Wellington, New Zealand.**—MATERIALS.—Supply to the Public Service Stores Tendering Board of Wellington of 73 miles of lead-covered copper, 31 miles of galvanised steel wire, 15,000 insulation cups, 15,000 galvanised bolts, etc. Copy of specification at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

JANUARY 7.—**Manchester.**—CARBONISING PLANT.—Erection of carbonising plants, for the Corporation Gas Department. Specifications of Mr. Frederick A. Price, superintendent, Gas Department, Town Hall. Charge, £1 1s.

JANUARY 9.—**Easington.**—GUARDS.—Guards to the electric light cables in the parish, for the Easington P.C. Mr. W. Wiggham, Acting Clerk, Easington, Durham.

NO DATE.—**Dublin.**—RAILS.—Supply to the Dublin United Tramways Company of 250 to 500 tons steel tramway rails. Particulars of Mr. R. S. Tresilian, Secretary, 9, Upper Sackville-street, Dublin.

### ROAD, SANITARY, AND WATER WORKS.

DECEMBER 21. — **Glasgow.**—SEWERS.—Construction of (1) 18-in. pipe sewers in (*a*) St. James'-road, from Ronald-street to Taylor-street; (*b*) Edgefauld-road from Petershill-road, Northward; (*c*) Petershill-road from Germiston Works to Edgefauld-road; and (2) a 2-ft. 6-in. brick sewer in St. James'-road, from Albert-street to Ronald-street. Specifications at the Office of Public Works, 64, Cochrane-street, Glasgow.

DECEMBER 23.—**Bury.**—STREET WORKS.—For carrying out private street works in several streets and back passages, for the Corporation. Specifications of the Borough Engineer and Surveyor, Bank-street, Bury. Deposit, £1.

DECEMBER 23.—**Durham.**—SEWERS.—(1) Construction of 1,040 lin. yds. of 9-in. pipe sewer, with manholes and ventilation columns, etc., at Springwell, near Durham; (2) construction of 948 lin. yds. of 6-in. pipe sewer at Sherburn, for the Durham R.D.C. Quantities of Mr. Geo. Gregson, Surveyor, Durham. Deposit, 10s. each contract.

DECEMBER 23.—**Mountmellick.**—WATER SUPPLY.—Laying of 5-in. cast-iron main from service reservoirs at Pallas to Rose Bridge, together with the supply of all pipes, valves Hatch-boxes, and fittings, for the Mountmellick R.D.C. Quantities of Mr. J. J. Williams, Clerk of Council, Mountmellick. Deposit, £2 2s.

DECEMBER 23.—**Rochdale.**—STREET WORKS.—Making-up Cromwell-street, and the sewering of Bruce-street. Quantities at the Borough Surveyor's Office.

DECEMBER 23.—**Stapleford.**—ROADS.—Making-up Ireton-grove, Attenborough, for the Stapleford R.D.C. Specifications of the Surveyor, Mr. C. Raynor, 115, Trent-boulevard, West Bridgford, Notts.

DECEMBER 24.—**Birmingham.**—SEWERS.—Construction of about 1,550 yds. of brick sewer and 2 miles of stoneware pipe sewer across private land between Pershore-road and Bristol-road, Bournville, and in Bristol-road, together with railway and canal crossing, and cast-iron and stoneware pipe drains on private property. Quantities of Mr. Henry E. Stilgoe, City Engineer, The Council House, Birmingham. Deposit, £2.

DECEMBER 26.—**Chesterfield.**—WATERWORKS.—Laying 7,220 yds. of 4-in. cast-iron water mains in the parishes of Calow and Temple Normanton, for the Chesterfield R.D.C. Specification of the Waterworks Engineer, Mr. Gilbert Frith, R.D.C. Offices, Chesterfield. Deposit, £1 1s.

DECEMBER 28.—**Hindley.**—BOWLING GREEN.—Laying of a public bowling green for the U.D.C. of Hindley. Specification, etc., from Mr. Oswald P. Abbott, Council Offices, Hindley. Deposit, 10s. 6d.

DECEMBER 28.—**Billericay.**—ROADS.—Making-up of roadways and footpaths, etc., at the Isolation Hospital, Gooseberry Green, for the Billericay R.D.C. Names to the Architect, Mr. Hugo R. Bird, St. Thomas's-gate, Brentwood.

[Those with an asterisk (*) are advertised in this issue.]

**ROADS, etc.—*continued.***

***The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.***

DECEMBER 29. — **Beverley.**—GROUND WORK.—Removal and relaying of about 2,500 sq. yds. of turf, including excavating, levelling, and banking of the top soil and subsoil of the race-course at Beverley, for the Beverley Race Company, Ltd. Information of Mr. T. Casson Beaumont, surveyor, The Club, North Bar Within, Beverley.

DECEMBER 30.—**Coatbridge.**—SEWERAGE WORKS.—(1) Construction of stormwater overflow, detritus tanks, clarification tanks, sludge-drying beds, and allied works; (2) construction of effluent sewer, dosing chamber, bacteria beds, and settling tanks. Schedule of Messrs. Kyle, Dennison, & Laing, civil engineers, 174, West George-street, Glasgow. Deposit, £2 2s.

DECEMBER 31. — **Upton-on-Severn.** — WATER SUPPLY.—Provision and laying of about 4¼ miles of 5-in., 4-in., and 3-in. cast-iron water mains, etc.; also the construction of engine-house, head well, reservoir, and other incidental works, for the Upton-on-Severn R.D.C. Quantities of the engineers, Messrs. Willcox & Raikes, Union-chambers, 63, Temple-row, Birmingham. Deposit, £5 5s.

JANUARY 1, 1915.—**Wandsworth.**—SANITARY.—Collection, removal, and disposal of house refuse from March 31 next, for the Wandsworth B.C. Form of tender of Mr. D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

JANUARY 4.—**Bromley.**—ROADS.—Part widening of a road known as Mottingham-lane, Mottingham, Kent, for the R.D. of Bromley, Kent. Specification at the office of the Council's Highway Surveyor, Mr. Robert Craig, Farnborough, Kent. Deposit, 10s. 6d.

JANUARY 4. — **Normanton.**—ROADS.—Widening and improving Dodsworth-hill, Normanton. The contract will comprise (1) street works; (2) demolition, alteration, and erection of buildings. Specifications, etc., of the Surveyor, Council Offices, Normanton.

* JANUARY 13.—**Enfield.**—DRAINAGE AND SANITARY WORKS.—The Edmonton Union invite tenders for drainage and sanitary work at the Chase Farm School.

## Auction Sale.

* JANUARY 13. — Messrs. Churchill & Sim will sell by auction, at the Great Hall, Winchester House, Old Broad-street, E.C., an assortment of deals, battens, boards, timbers, etc.

## Public Appointment.

* DECEMBER 24.—ARCHITECTURAL ASSISTANT.—The Essex C.C. invite applications for the above post. Salary, £150 per annum.

**[Those with an asterisk (*) are advertised in this issue.]**

## LAW REPORTS.

KING'S BENCH DIVISIONAL COURT.
(Before Justices DARLING, BANKES, AVORY, LUSH, and ATKIN.)

### Collection for Building Strikers: Mathers *v.* Penfold.

THE Court recently dismissed an appeal by the police from a decision of Mr. Mead (a Metropolitan magistrate), who refused to convict a Mr. Penfold on a charge of begging. During the recent building strike Mr. Penfold was authorised by the Shamrock Branch of the United Order of General Labourers to make a street collection. Tickets were given to subscribers representing the amounts they had given, and while collecting in St. James's-square, Westminster, the police stopped Mr. Penfold and instituted proceedings against him under the Vagrancy Act, 1824, alleging that he was begging. The magistrate dismissed the case, and the Divisional Court now upheld that decision.

Mr. Justice Darling said Mr. Penfold undoubtedly placed himself in a public street to solicit contributions for the benefit of persons belonging to his society; but the statute did not apply to persons who did that. It was framed to deal with quite a different type of person.

### Heysham Property Owners and the District Council.

AT Lancaster Castle on Saturday, the magistrates were asked to hear and determine an objection to street works in Westminster-road, Heysham. Mrs. Ann Marshall brought the objection, and she was supported by a large number of other owners said to number fifteen to twenty.

Mr. A. Sewart (Messrs. Hall, Marshall, & Sewart), Lancaster, appeared for the objector, and Mr. E. W. Wingate Saul, barrister, Manchester (instructed by Mr. H. Bates, Clerk), appeared for the Heysham Urban District Council.

For the Council Mr. Wingate Saul said Westminster-road was part of the Battery Estate, which was laid out in 1896 or 1897. At that time the local authority was the Lancaster Rural District Council; but it was important to remember that the Lancaster Rural District Council had not the powers conferred upon the Urban Council and if the plans complied with the by-laws they had no option but to pass the plans.

In 1912 the Heysham Council decided that they would pave, make good, and sewer this particular road, and in July, 1914, the provisional estimates were approved and the notices issued. Objection was raised on behalf of Mrs. Marshall on the grounds that the sewer was a public sewer, laid under the supervision and approval of the Lancaster Rural District Council, the then local authority, and she could not be charged with the responsibility for relaying the sewer; and, alternatively, that the work was unnecessary, also that the frontage was pitched when the street was made, and was in a better state than it would be if taken up and relaid. It was also urged that the present war-time was not a convenient time to call upon property owners to do such work. The road had not been declared repairable by the inhabitants at large, and therefore the Urban Council must call upon the owners to make good the road.

Mr. Henry Miller, Surveyor to the Heysham Urban District Council, said the sewer was in a very unsatisfactory state. It was not properly laid, was sunk in places, and leaky at the joints. In some places the pitching had not been done and in other cases had been improperly done.

Mr. Hipwood, Borough Surveyor, Morecambe, said the pitching was the worst he had gone over. The sewer was leaking at every joint, and most decidedly required relaying.

Mr. Bear, an owner in Westminster-road, supported the Urban Council's desire that the work should be done. He had spent a lot of money in making good what was a bad job from the beginning.

Mr. Sewart, on behalf of the owners, submitted that when once they had made a street to the satisfaction of a local authority they could not be called upon to remake it. The Urban Council had accepted responsibility for the sewer, repairing manholes, etc. The sewer was vested in the local authority and could not be relaid a second time at the expense of the owners.

Mr. Moore, surveyor, who had the laying-out of the Battery Estate, said the work of pitching the street and making the sewer was done under the supervision of the Surveyor (now deceased) of the Lancaster Rural District Council at a cost of nearly £300, and was quite a good job. The pitching was better now where the street had been made than in many instances where the streets of Heysham are repairable by the inhabitants at large.

The Bench dismissed the objection, and allowed the Urban Council 15 guineas costs.

## WESTMINSTER CITY COUNCIL.

AT the fortnightly sitting of the Westminster City Council on December 10 the following amongst other matters were dealt with:—

*Application for Sanction to Borrow.*—It was agreed on the recommendation of the Finance Committee that, subject to the adoption by the Council of the recommendation of the Special Committee *re* stables and depôts, application be made to the London County Council for their sanction to the borrowing of £3,000 for purchasing the unexpired term of the lease of Lock Wharf, Gatliff-road.

*L.C.C. Tramways Extension.*—The Law and Parliamentary Committee reported the receipt of a letter from the London County Council stating that the County Council had before them the reports of the Committees concerned regarding their proposed application to Parliament for authority to enable certain additional new tramways to be constructed, and after careful consideration they decided that the proposal regarding the suggested tramways from Victoria to Westminster *vid* Victoria-street, Broad Sanctuary, Parliament-square, and Bridge-street should not be further proceeded with in the Session of Parliament of 1915. In coming to this conclusion the County Council had regard to the fact that the consent of the Westminster City Council to the construction of the above-mentioned tramways had not been secured.

*Avery Farm-row: Alterations to Kerb.*—On the recommendation of the Works Committee it was agreed that the footway in Avery Farm-row be relaid at an estimated cost of £100.

*Strand Widening, Adam-street to Durham House-street: Tivoli Music Hall, Vaults.*—The Works Committee reported that they have again had before them the letter from the Chief Engineer, London County Council, with reference to the construction of vaults at the proposed new premises of the Tivoli Music Hall Company in the Strand, stating that the County Council has had plans submitted for a retaining wall to sever the whole of the vaults now beonging to the Tivoli to the line shown on the plan sent to the City Council, and it was agreed that the London County Council be informed that the City Council are of opinion that it is desirable that the vault construction and retaining wall be carried through to completion on the lines originally arranged and approved by the City Council, and that, therefore, the City Council are unable to agree that, as a temporary measure, the whole of the existing upper vault under Adam-street be left intact, as suggested by the Chief Engineer of the London County Council.

### TO CORRESPONDENTS.

**NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to THE BUILDER LTD., and *not* to the Editor.**

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**N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.**

## PRICES CURRENT OF MATERIALS.

**[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]**

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

**BRICKS, &c.**

| | £ s. d. |
|---|---|
| Per 1000 Alongside, in River. | |
| Best Stocks | 1 16 6 |
| Picked Stocks for Facings | 2 10 0 |
| Per 1000, Delivered at Railway Depôt. | |
| | £ s. d. |
| Fletton | 1 14 0 |
| Best Fareham Red | 2 12 0 |
| Best Red Pressed Ruabon Facing | 5 0 0 |
| GLAZED BRICKS— | £ s. d. |
| Best White, Ivory, and Salt Glazed Stretchers | 13 0 0 |
| Headers | 12 10 0 |
| Quoins, Bullnose and 4½ in. Flats | 16 10 0 |
| D'ble Str'tch'rs | 18 10 0 |
| Second Quality £1 10s. per 1000 less than best. | |
| | £ s. d. |
| Best Blue Pressed Staffordshire | 3 15 0 |
| Do. Bullnose | 4 0 0 |
| Best Stourbridge Fire Bricks | 4 0 0 |
| | £ s. d. |
| Double Headers | 15 10 0 |
| One Side and two Ends | 19 10 0 |
| Two Sides and one End | 20 10 0 |
| Splays and Squints | 18 0 0 |

| | s. d. | |
|---|---|---|
| Thames and Pit Sand | 7 3 | per yard, delivered. |
| Thames Ballast | 5 9 | " |
| Best Portland Cement | 37 0 | per ton, " |
| Best Ground Blue Lias Lime | 20 0 | " |

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 14s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton, at rly dpt.

**STONE.**

| | Per Ft. Cube. s. d. | | s. d. |
|---|---|---|---|
| BATH STONE—delivered on road waggons, Paddington Depôt | 1 7½ | | |
| Do. do. delivered on road waggons, Nine Elms Depôt | 1 9½ | | |
| PORTLAND STONE (20 ft. average)— | s. d. | | |
| Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf | 2 4½ | | |
| White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf | 2 6½ | | |
| Per Ft. Cube, delivered at Railway Depôt. | s. d. | | s. d. |
| Ancaster in blocks | 1 10 | Closeburn Red Freestone | 2 |
| Bear in blocks | 1 6 | Red Mansfield Freestone | 2 |
| Greenshill in blocks | 1 10 | Talacre & Gwespyr Stone | 2 |
| Darley Dale in blocks | 2 4 | | |
| Red Corsehill in blocks | 2 3 | | |

### STONE (*Continued*).

YORK STONE—*Robin Hood Quality.*

| | s. | d. |
|---|---|---|
| Per Ft. Cube, Delivered at Railway Depôt. | | |
| Scappled random blocks | 2 | 10 |
| Per Ft. Super., Delivered at Railway Depôt. | | |
| 6 in. sawn two sides landings to sizes (under 40 ft. super.) | 2 | 8 |
| 6 in. rubbed two sides ditto, ditto | 2 | 6 |
| 3 in. sawn two sides slabs (random sizes) | 0 | 11½ |
| 2 in. to 2½ in. sawn one side slabs (random sizes) | 0 | 7 |
| 1¼ in. to 2 in. ditto, ditto | 0 | 6 |

HARD YORK—

| | s. | d. |
|---|---|---|
| Per Ft. Cube, Delivered at Railway Depôt. | | |
| Scappled random blocks | 3 | 0 |
| Per Ft. Super., Delivered at Railway Depôt. | | |
| 6 in. sawn two sides landing to sizes (under 40 ft. super.) | 2 | 8 |
| 6 in. rubbed two sides ditto | 3 | 0 |
| 3 in. sawn two sides slabs (random sizes) | 1 | 2 |
| 2 in. self-faced random flags | 0 | 5 |

### SLATES.

Per 1000 of 1200 at Railway Depôt.

| In. In. | £ | s. | d. |
|---|---|---|---|
| 20 × 10 best blue Bangor | 13 | 2 | 6 |
| 20 × 12 ditto | 13 | 17 | 6 |
| 20 × 10 1st q'lity ditto | 13 | 0 | 0 |
| 20 × 12 ditto | 13 | 15 | 0 |
| 16 × 8 ditto | 7 | 5 | 0 |
| 22 × 10 best blue Portmadoc | 12 | 12 | 6 |
| 16 × 8 ditto | 6 | 12 | 6 |

| In. In. | £ | s. | d. |
|---|---|---|---|
| 20 × 10 best Eureka unfading green | 15 | 17 | 6 |
| 20 × 12 ditto | 18 | 7 | 6 |
| 16 × 10 ditto | 12 | 5 | 0 |
| 16 × 8 ditto | 10 | 5 | 0 |
| 20 × 10 permanent green | 12 | 12 | 6 |
| 18 × 10 ditto | 10 | 12 | 6 |
| 16 × 8 ditto | 7 | 12 | 6 |

### TILES.

At Railway Depôt.

| | s. | d. |
|---|---|---|
| Best plain red roofing (per 1000) | 42 | 0 |
| Hip and Valley (per doz.) | 2 | 7 |
| Best Broseley (per 1000) | 50 | 0 |
| Do. Ornamental (per 1000) | 52 | 6 |
| Hip and Valley (per doz.) | 4 | 0 |
| Best Ruabon red, brown, or brindle (Edw'ds)(pr1000) | 57 | 6 |
| Do. Ornamental (per 1000) | 60 | 0 |
| Hip (per doz.) | 4 | 0 |
| Valley (per doz) | 3 | 6 |

| | s. | d. |
|---|---|---|
| Best "Hartshill" brand, plain sand-faced (per 1000) | 45 | 0 |
| Do. pressed (per 1000) | 42 | 6 |
| Do. Ornamental (per 1000) | 47 | 6 |
| Hip (per doz.) | 4 | 0 |
| Valley (per doz) | 3 | 6 |
| Staffords. (Hanley) Reds or Brindled (per 1000) | 42 | 6 |
| Hand-made sand-faced (per 1000) | 45 | 0 |
| Hip (per doz.) | 4 | 0 |
| Valley (per doz) | 3 | 6 |

### WOOD.

| BUILDING WOOD. | At per standard. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in. | 17 | 5 | 0 | 18 | 15 | 0 |
| Deals: best 3 in. by 9 in. | 17 | 5 | 0 | 18 | 5 | 0 |
| Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 9 in. | 14 | 12 | 6 | 15 | 12 | 6 |
| Battens: best 2½ by 6 and 3 by 6 | 0 | 10 | 0 | less than 7 in. and 8 in. | | |
| Deals: seconds | 1 | 0 | 0 | less than best | | |
| Battens: seconds | 0 | 10 | 0 | " | " | |
| 2 in. by 4 in. and 2 in. by 6 in. | 13 | 5 | 0 | 14 | 5 | 0 |
| 2 in. by 4½ in. and 2 in. by 5 in. | 12 | 2 | 6 | 13 | 2 | 6 |
| Foreign Sawn Boards—1 in. and 1¼ in. by 7 in. | 0 | 10 | 0 | more than battens. | | |
| ½ in. | 1 | 0 | 0 | " | | |

| | At per load of 50 ft. | | | | | |
|---|---|---|---|---|---|---|
| Fir timber: best middling Danzig or Memel (average specification) | 6 | 0 | 0 | 7 | 5 | 0 |
| Seconds | 5 | 7 | 6 | 6 | 17 | 6 |
| Small timber (8 in. to 10 in.) | 4 | 12 | 6 | 4 | 17 | 6 |
| Small timber (6 in. to 8 in.) | 3 | 17 | 6 | 4 | 5 | 0 |
| Swedish balks | 3 | 5 | 0 | 3 | 12 | 6 |
| Pitch-pine timber (30 ft. average) | 7 | 10 | 0 | 8 | 10 | 0 |

| JOINERS' WOOD. | At per standard. | | | | | |
|---|---|---|---|---|---|---|
| White Sea: first yellow deals, 3 in. by 11 in. | 29 | 15 | 0 | 31 | 0 | 0 |
| 3 in. by 9 in. | 27 | 12 | 6 | 29 | 0 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 21 | 5 | 0 | 22 | 5 | 0 |
| Second yellow deals, 3 in. by 11 in. | 24 | 15 | 0 | 25 | 15 | 0 |
| Do. 3 in. by 9 in. | 23 | 0 | 0 | 24 | 0 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 17 | 5 | 0 | 18 | 5 | 0 |
| Third yellow deals, 3 in. by 11 in. and 9 in. | 18 | 5 | 0 | 19 | 5 | 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 16 | 0 | 0 | 17 | 0 | 0 |
| Petersburg: first yellow deals, 3 in. by 11 in. | 26 | 10 | 0 | 27 | 10 | 0 |
| Do. 3 in. by 9 in. | 23 | 0 | 0 | 24 | 0 | 0 |
| Battens | 17 | 5 | 0 | 18 | 5 | 0 |
| Second yellow deals, 3 in. by 11 in. | 19 | 5 | 0 | 20 | 5 | 0 |
| Do. 3 in. by 9 in. | 18 | 7 | 6 | 19 | 7 | 6 |
| Battens | — | | | — | | |
| Third yellow deals, 3 in. by 11 in. | 16 | 0 | 0 | 17 | 0 | 0 |
| Do. 3 in. by 9 in. | 15 | 10 | 0 | 16 | 10 | 0 |
| Battens | 13 | 5 | 0 | 14 | 5 | 0 |
| White Sea and Petersburg—First white deals, 3 in. by 11 in. | 19 | 5 | 0 | 20 | 5 | 0 |
| First white deals, 3 in. by 9 in. | 17 | 2 | 6 | 18 | 2 | 6 |
| Battens | 15 | 0 | 0 | 15 | 10 | 0 |
| Second white deals, 3 in. by 11 in. | 17 | 2 | 6 | 18 | 2 | 6 |
| Second white deals, 3 in. by 9 in. | 15 | 0 | 0 | 16 | 0 | 0 |
| Battens | 13 | 15 | 0 | 14 | 5 | 0 |
| Pitch-pine: deals | 30 | 15 | 0 | 32 | 15 | 0 |
| Under 2 in. thick extra | 0 | 10 | 0 | 1 | 0 | 0 |
| Columbian or Oregon Pine, best quality | 26 | 0 | 0 | 28 | 0 | 0 |
| Yellow Pine—First, regular sizes | 54 | 0 | 0 | upwards. | | |
| Oddments | 37 | 0 | 0 | " | | |
| Seconds, regular sizes | 38 | 10 | 0 | " | | |
| Oddments | 32 | 0 | 0 | " | | |
| Kauri Pine—Planks per ft. cube | 0 | 6 | 6 | 0 | 7 | 6 |

### WOOD (*Continued*).

| JOINERS' WOOD (*Continued*)— | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Dantzig and Stettin Oak Logs—Large, per ft. cube | 0 | 4 | 0 | 0 | 5 | 0 |
| Small " " | 0 | 3 | 6 | 0 | 4 | 0 |
| Wainscot Oak Logs, per ft. cube | 0 | 9 | 6 | 0 | 11 | 0 |
| Dry Wainscot Oak, per ft. super. as inch | 0 | 0 | 11 | 0 | 1 | 3 |
| ¼ in. do. do. | 0 | 0 | 10 | 0 | 0 | 11 |
| Dry Mahogany — Honduras, Tabasco, per ft. super. as inch | 0 | 0 | 11 | 0 | 1 | 4 |
| Selected, Figury, per ft. super. as inch | 0 | 1 | 6 | 0 | 2 | 6 |
| Cuba Mahogany | 0 | 1 | 6 | 0 | 2 | 0 |
| Dry Walnut, American, per ft. super. as inch | 0 | 0 | 11 | 0 | 1 | 3 |
| French, "Italian," Walnut | 0 | 0 | 11 | 0 | 1 | 6 |
| Teak, per load (Rangoon or Moulmein) | 28 | 0 | 0 | 34 | 0 | 0 |
| Do., do. (Java) | 24 | 0 | 0 | 27 | 0 | 0 |
| American Whitewood planks, per ft. cube | 0 | 6 | 6 | 0 | 7 | 6 |

| Prepared Flooring, etc.— | Per square. | | | | | |
|---|---|---|---|---|---|---|
| 1 in. by 7 in. yellow, planed and shot | 0 | 15 | 6 | 0 | 18 | 0 |
| 1 in. by 7 in. yellow, planed and matched | 0 | 16 | 0 | 0 | 19 | 0 |
| 1¼ in. by 7 in. yellow, planed and matched | 0 | 18 | 6 | 1 | 3 | 0 |
| 1 in. by 7 in. white, planed and shot | 0 | 15 | 0 | 0 | 17 | 0 |
| 1 in. by 7 in. white, planed and matched | 0 | 15 | 6 | 0 | 17 | 6 |
| 1¼ in. by 7 in. white, planed and matched | 0 | 17 | 6 | 0 | 19 | 6 |
| ¼ in. by 7 in. yellow, matched and beaded or V-jointed boards | 0 | 13 | 6 | 0 | 16 | 0 |
| 1 in. by 7 in. " " | 0 | 16 | 0 | 0 | 19 | 6 |
| ¼ in. by 7 in. white " " | 0 | 13 | 0 | 0 | 15 | 0 |
| 1 in. by 7 in. " " | 0 | 15 | 6 | 0 | 16 | 6 |

6 in. at 6d. to 9d. per square less than 7 in.

### JOISTS, GIRDERS, &c.

| | In London or delivered Railway Vans, per ton. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| Rolled Steel Joists, ordinary sections | 9 | 10 | 0 | 10 | 10 | 0 |
| Compound Girders, ordinary sections | 12 | 0 | 0 | 13 | 0 | 0 |
| Steel Compound Stanchions | 13 | 0 | 0 | 15 | 0 | 0 |
| Angles, Tees, and Channels ordinary sections | 12 | 0 | 0 | 13 | 0 | 0 |
| Plitch Plates | 12 | 0 | 0 | 13 | 0 | 0 |
| Cast Iron Columns & Stanchions, including ordinary patterns | 9 | 0 | 0 | 10 | 0 | 0 |

### METALS.

| | Per ton, in London. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| IRON— Common Bars | 9 | 10 | 0 | 10 | 0 | 0 |
| Staffordshire Crown Bars, good merchant quality | 9 | 15 | 0 | 10 | 5 | 0 |
| Staffordshire "Marked Bars" | 11 | 10 | 0 | — | | |
| Mild Steel Bars | 9 | 15 | 0 | 10 | 5 | 0 |
| Hoop Iron, basis price | 10 | 10 | 0 | — | | |
| " " Galvanised (* And upwards, according to size and gauge.) | 16 | 10 | 0 | — | | |
| Sheet Iron Black—Ordinary sizes to 20 g. | 10 | 15 | 0 | — | | |
| " " 24 g. | 11 | 15 | 0 | — | | |
| " " 26 g. | 13 | 5 | 0 | — | | |
| Sheet Iron, Galvanised, flat, ordinary quality—Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g. | 16 | 0 | 0 | — | | |
| Ordinary sizes to 22 g. and 24 g. | 16 | 10 | 0 | — | | |
| Ordinary sizes to 26 g. | 17 | 10 | 0 | — | | |
| Sheet Iron, Galvanised, flat, best quality—Ordinary sizes to 20 g. | 18 | 10 | 0 | — | | |
| " " 22 g. and 24 g. | 19 | 0 | 0 | — | | |
| Ordinary sizes to 26 g. | 20 | 0 | 0 | — | | |
| Galvanised Corrugated Sheets—Ordinary sizes, 6 ft. to 6 ft. 20 g. | 15 | 0 | 0 | — | | |
| Ordinary sizes, 22 g. and 24 g. | 16 | 0 | 0 | — | | |
| Ordinary sizes, 26 g. | 17 | 0 | 0 | — | | |
| Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker | 13 | 0 | 0 | — | | |
| Best Soft Steel Sheets, 22 g. & 24 g. | 14 | 0 | 0 | — | | |
| Best Soft Steel Sheets, 26 g. | 16 | 0 | 0 | — | | |
| Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.) | 13 | 0 | 0 | 13 | 10 | 0 |

### LEAD, &c.

| | Delivered in London. £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| LEAD—Sheet, English, 4 lb. and up | 24 | 0 | 0 | — | | |
| Pipe in coils | 24 | 10 | 0 | — | | |
| Soil pipe | 27 | 10 | 0 | — | | |
| Compo pipe | 27 | 10 | 0 | — | | |

NOTE—Delivery in country in not less than 5 cwt. lots, 1s. per ton extra.

| | In casks of 10 cwt. | | | | | |
|---|---|---|---|---|---|---|
| ZINC— Sheet— | 50 | 0 | 0 | — | | |
| COPPER— Strong Sheet per lb. | 0 | 1 | 2 | — | | |
| " Thin " | 0 | 1 | 3 | — | | |
| Copper nails " | 0 | 1 | 2 | — | | |
| Copper wire " | 0 | 1 | 2 | — | | |
| BRASS— Strong Sheet per lb. | 0 | 1 | 2 | — | | |
| " Thin " | 0 | 1 | 3 | — | | |
| TIN—English Ingots " | 0 | 1 | 6 | — | | |
| SOLDER—Plumbers' " | 0 | 0 | 9 | — | | |
| " Tinmen's " | 0 | 1 | 0 | — | | |
| " Blowpipe " | 0 | 1 | 3 | — | | |

### ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

| | | | |
|---|---|---|---|
| 15 oz. thirds | 5½d. | 26 oz. fourths | 6d. |
| " fourths | 5d. | 32 oz. thirds | 9d. |
| 21 oz. thirds | 6d. | " fourths | 6½d. |
| " fourths | 5½d. | Fluted Sheet, 15 oz. | 4½d. |
| 26 oz. thirds | 6½d. | " 21 oz. | 5½d. |

### ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

| | |
|---|---|
| ¼ Rolled plate | 2½d. |
| ⅛ Rough rolled and rough cast plate | 3d. |
| ¼ Rough rolled and rough cast plate | 3½d. |
| Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white | 4d. |
| Ditto, tinted | 5½d. |

* Not less than two crates.

| OILS, &c. | | £ | s. | d. |
|---|---|---|---|---|
| Raw Linseed Oil in pipes per gallon | | 0 | 2 | 1 |
| " " " in barrels " | | 0 | 2 | 2 |
| " " " in drums " | | 0 | 2 | 4 |
| Boiled " " in barrels " | | 0 | 2 | 4 |
| " " " in drums " | | 0 | 2 | 6 |
| Turpentine in barrels " | | 0 | 2 | 11 |
| " in drums " | | 0 | 3 | 2 |
| Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.) | | 30 | 15 | 0 |
| Red Lead, Dry | per ton | 29 | 10 | 0 |
| Best Linseed Oil Putty | per cwt. | 0 | 10 | 6 |
| Stockholm Tar | per barrel | 1 | 12 | 0 |

| VARNISHES, &c. | Per gallon. £ | s. | d. |
|---|---|---|---|
| Fine Pale Oak Varnish | 0 | 8 | 0 |
| Pale Copal Oak | 0 | 10 | 6 |
| Superfine Pale Elastic Oak | 0 | 12 | 6 |
| Fine Extra Hard Church Oak | 0 | 10 | 0 |
| Superfine Hard-drying Oak, for seats of Churches | 0 | 14 | 6 |
| Fine Elastic Carriage | 0 | 12 | 9 |
| Superfine Pale Elastic Carriage | 0 | 16 | 0 |
| Fine Pale Maple | 0 | 10 | 0 |
| Finest Pale Durable Copal | 0 | 18 | 6 |
| Extra Pale Trench Oil | 1 | 1 | 0 |
| Eggshell Flating Varnish | 0 | 18 | 0 |
| White Pale Enamel | 1 | 4 | 0 |
| Extra Pale Paper | 0 | 12 | 0 |
| Best Japan Gold Size | 0 | 10 | 0 |
| Best Black Japan | 0 | 16 | 0 |
| Oak and Mahogany Stain | 0 | 9 | 0 |
| Brunswick Black | 0 | 8 | 0 |
| Berlin Black | 0 | 16 | 0 |
| Knotting | 0 | 10 | 6 |
| French and Brush Polish | 0 | 10 | 0 |

**[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]**

# NOTICES.

Tel., Regent 3600. Telegrams, The Builder, London.

### CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

| | |
|---|---|
| Six lines or under | 4s. 6d. |
| Each additional line | 1s. 6d. |

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| | |
|---|---|
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| | |
|---|---|
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PREPAYMENT IS ABSOLUTELY NECESSARY.

*.* Stamps must not be sent; but all sums should be remitted by Postal Orders, payable to THE BUILDER LTD., to the office, 4, Catherine Street, Aldwych, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS must reach the Office before TEN o'clock on WEDNESDAY MORNING.

Whilst every endeavour is made to ensure accuracy, it must be understood that the Publishers do not hold themselves in any way responsible for the correctness of statements contained in advertisements appearing in "THE BUILDER."

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AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES 1s. 6d. EACH. By post (carefully packed), 1s. 6d.

# TENDERS.

*.* Next week, owing to the Christmas holidays, we go to press on *Tuesday*, and no communication can be considered which reaches us later than 2 p.m. on that day.

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERYSTWYTH.—Drainage scheme at Borth, for the Aberystwyth Rural District Council:—

| | |
|---|---|
| Page* | £2,870 |

BRENTFORD.—For paving in Ealing-road, for the Brentford Urban District Council:—

| | | | |
|---|---|---|---|
| J. Wimpey & Co. | £2,199 | 0 | 0 |
| W. Griffiths & Co., Ltd. | 2,629 | 0 | 0 |
| Durax Dustless Roads, Ltd. | 2,370 | 19 | 3 |
| Dick, Kerr, & Co. | 2,294 | 0 | 0 |
| J. Mowlem & Co., Ltd. | 2,206 | 15 | 0 |
| Clements, Knowling, & Co., Ltd., Goat Wharf, Brentford* | 2,077 | 0 | 0 |

**CHELMSFORD.**—Provision of heating apparatus at slipper baths, for the Corporation :—
Christy & Norris* ..... £161 6 9

**COVENTRY.**—For alteration to the Infirmary, for the Board of Guardians :—
H. Clarke & Sons, viz. :—Alterations to second floor of women's block, £295; alterations to central block, £205; for taking out division walls in two wards in old infirmary block, £95.*

**CRAWLEY.**—For erection of new elementary school at Crawley, for the West Sussex and Chichester Joint Education Committee. Quantities by Mr. Haydn P. Roberts, County Education Architect, Thurloe House, High-street, Worthing :—

| | | | |
|---|---|---|---|
| J. Bodle & Addison ... | £5,997 | R. Cook & Sons ..... | £5,282 |
| J. Ockenden & Sons | 5,696 | J. Longley & Co. ... | 5,278 |
| W. F. Sendall & Co. | 5,599 | Rowland Bros. ..... | 4,960 |
| Bartley & Ward..... | 5,420 | F. Sandell & Sons, Worthing* ..... | 4,945 |
| G. Potter ..... | 5,295 | | |

**DERBY.**—Erection of Pear Tree Library, for the Corporation :—
R. Weston & Sons* ..... £4,500

**DERBY.**—Erection of Alvaston Library, for the Corporation :—
Pegg & Bailey* ..... £4,779

**DOVER.**—Erection of County school for boys, for the Kent Education Committee :—

| | | | |
|---|---|---|---|
| S. Wise & Brightman ..... | £14,600 0 | C. E. Skinner & Son ..... | £12,863 0 |
| L. T. Dadds ... | 14,560 0 | Ellis Bros..... | 13,645 10 |
| W. H. Griggs ... | 13,980 0 | C. E. Wallis & Son ..... | 13,634 0 |
| G. Lewis & Sons | 13,943 0 | G. H. Denne & Son, Deal* ... | 13,280 0 |
| Hayward & Paramor ..... | 13,878 0 | R. J. Barwick ... | 10,221 6 |

**GLASGOW.**—Construction of sludge main from Dalmarnock works to the Shieldhall works, for the Corporation :—
I. Craik* ..... £11,477 11

**GRAFFHAM.**—For new cloakroom and other improvements to Graffham Council schools :—

| | | | |
|---|---|---|---|
| H. Tribe & Sons ... | £260 5 | H. Cooper ..... | £185 10 |
| G. Luff ..... | 249 0 | J. Boxall, Petworth* ..... | 170 0 |
| C. Leazell ..... | 243 0 | | |
| H. C. Deane & Son | 198 15 | | |

**HEMSWORTH.**—For erection of a new Board-room and alteration of the existing offices at the Workhouse, for the Rural District Council :—

| | |
|---|---|
| Mullins & Richardson ..... | £2,901 10 0 |
| J. H. Wood, Son, & Co. ..... | 2,595 0 0 |
| W. Hanley, Hemsworth* ..... | 2,549 6 0 |
| Swift Bros. ..... | 2,540 0 0 |
| L. Brook ..... | 2,463 16 8 |

**ISLINGTON.**—Erection of library in Essex-road, for the Borough Council :—

| | | | |
|---|---|---|---|
| W. Cubitt & Co. ... | £11,810 | J. Carmichael ..... | £10,577 |
| Trollope & Sons & Colls & Sons, Ltd. | 11,594 | L. H. & B. Roberts | 10,067 |
| Brand, Pettit, & Co. | 10,936 | Sabey & Son ..... | 10,034 |
| Holloway Bros. (London), Ltd. ... | 10,890 | Dove Bros., Ltd. ... | 9,908 |
| Higgs & Hill, Ltd. | 10,666 | Rice & Son ..... | 9,834 |
| H. J. Williams, Ltd | 10,654 | Patman & Fotheringham, Ltd.* ... | 9,771 |

**KEIGHLEY.**—Supply of steam piping, for the Electricity Committee of the Corporation :—
Babcock & Wilcox, Ltd. ..... £133

**LONDON.**—For the reconstruction of the police-station at Edmonton. Mr. J. Dixon Butler, F.R.I.B.A., Architect, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, Chidgey, 8, Adelphi-terrace, W.C. :—

| | | | |
|---|---|---|---|
| Moss & Sons ..... | £5,213 | Sheffield Bros..... | £4,950 |
| Fairhead & Son ..... | 5,128 | Garlick, Ltd. ..... | 4,945 |
| Roome & Co. ..... | 5,070 | Newby Bros. ..... | 4,920 |
| Godson & Sons ..... | 5,011 | Patman & Fotheringham ..... | 4,911 |
| A. E. Symes ..... | 5,009 | A. Monk ..... | 4,887 |
| Knight & Sons ..... | 5,004 | | |
| W. J. Dickens ..... | 4,980 | | |

**LONDON.**—For the construction of covered service reservoirs at Betsome's Hill and Westerham Hill, for the Metropolitan Water Board :—

| | | Corrected Amount. |
|---|---|---|
| W. Muirhead & Co., Ltd. | £11,370 6 10 | — |
| T. Wood & Sons, Ltd. ... | 6,877 17 11 | — |
| A. & S. Hyslop ..... | 6,851 15 7 | — |
| A. Pasey & Son..... ..... | 6,800 4 3 | — |
| Caffin & Co..... | 6,618 0 3 | — |
| J. J. Shardlow ..... | 6,210 16 0 | £6,210 5 6 |
| Dick, Kerr & Co., Ltd. ... | 6,098 18 8 | — |
| R. Robinson & Co.* ..... | 5,798 11 4 | — |

**LYMINSTER.**—For alterations and additions to Lyminster Council school :—

| | | Provision of laying on gas service. |
|---|---|---|
| G. Gillam ..... | £389 0 0 | £49 15 0 |
| A. Crane..... | 377 14 0 | 45 12 0 |
| F. Sandell & Sons ..... | 365 0 0 | 39 0 0 |
| A. Burrell & Standing ..... | 353 0 0 | 41 0 0 |
| Snewin Bros..... ..... | 335 0 0 | 34 10 9 |
| J. Lindfield & Sons, Ltd., Littlehampton* ..... | 330 0 0 | 35 0 0 |

**MALDON.**—The Rural District Council have accepted the following tenders for the Tollesbury water scheme :—

*Building Shed, etc.*
J. Rayner, East Hanningfield ..... £397 10 0

*Overhead Tank on Open Steel Staging.*
Wilson & Co., Frome..... 467 11 0

*Gas Plant, Engines and Pumping Plant.*
R. Proctor & Co., Lincoln ..... 1,097 0 0

*Provision and Laying of Mains.*
W. Press & Co., Westminster ..... 1,456 7 3

**NEWQUAY.**—The Urban District Council has accepted the following tenders :—
H. Clemens, construction of a tunnel sewer in Central-square and Fore-street, at £545 3s., and the construction of 15-in. and 12-in. sewers in Cranlock-street, £356 14s.; Murrin & Pengelley, for 12-in. sewer in Tower-road, at £254 17s. 10d.; a 12-in. sewer in Bank-street and Beachfield-avenue, at £261 6s.; a 12-in. sewer in Station-road and Tolcarne-road and Edgcumbe-avenue, at £635 10s. 10d.

**ROCHFORD.**—Painting Workhouse, for the Rochford Board of Guardians :—
Myall Bros., Southend ..... £230

**ROMFORD.**—Construction of foul and surface water sewers, etc., in the London-road, for the Urban District Council :—
B. H. Hale, Romford* ..... £4,184 8

**SCULCOATES.**—Construction of reservoir at Swanland of 500,000 gallons capacity, for the Sculcoates Rural District Council :—
Yorkshire Hennebique Co.* ..... £1,813

**SCULCOATES.**—Construction of 11-in. sewer, for Rural District Council :—
B. Robinson..... £187

**SOUTHAMPTON.**—For construction of reservoir at Bassett, for the Corporation :—
W. Moss & Sons, Ltd.* ..... £18 184 10

**WALTHAMSTOW.**—For sundry alterations and improvements to the interior of the boys' department, Maynard-road School, for the Education Committee. Mr. H. Prosser, M.S.A., Architect to the Committee :—

| | | | |
|---|---|---|---|
| W. Eyre ..... | £703 0 | A. G. Lucas ..... | £439 7 |
| Rowlett Bros. ..... | 572 15 | J. Sands ..... | 400 0 |
| Knight & Son ..... | 490 0 | A. G. Crisp, Walthamstow* ..... | 329 0 |
| A. G. Barton ..... | 467 0 | | |
| J. S. Hammond, Sons, & Co. ..... | 458 0 | | |


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WAINSCOT **Oak**
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EXPERTS IN
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BETHNAL GREEN, LONDON, E.

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**STEEL BACK-FLAP HINGES**
As used for
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Size, 6 in. × 2½ in.
DESPATCH AT ONCE.
**50,000 PAIRS IN STOCK.**
YOUNG & MARTEN, Ltd., STRATFORD.

**Ham Hill Stone.**
**Doulting Stone.**
**Portland Stone.**
The Ham Hill and Doulting Stone Co., Limited
(Incorporating the Ham Hill Stone Co. and C. Trask & Son, The Doulting Stone Co.).
Norton, Stoke-under-Ham, Somerset.
London Agent :—Mr. E. A. Williams, 16, Craven-street, Strand.

**Asphalte.**—The Seyssel and Metallic Lava Asphalte Co. (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to Forth Bridge Co. T.N. 2644 Central.

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